SUGAR LAND PEDESTRIAN AND BICYCLE MASTER PLAN

Parks Board Presentation

May 14, 2013

Today's Meeting

- **Background**
  - **Update 2007 plan**
    - **Non-recreational trips**
    - **Barrier solutions**
- **Review final recommendations**
- **Solicit Parks Board input**

Project Approach

- **An Extensive Citizen Dialogue** (over **1,700** comments received to date):
  - **Citywide Open House, Constellation Field (60 + responses)**
  - **Online survey (380 responses)**
  - **CommunityWalk (online mapping exercise, over 1,100+ comments)**
  - **9 Stakeholder meetings (75+ representatives)**
  - **Open house/Public Mtg. June 25 (54 attendees)**
  - **Online Town Hall (41 comments)**
  - **Citizen comments received (still ongoing)**

Project Approach

- **Technical analysis**
  - **Multi-departmental team**
  - **Field reviews**
  - **National guidance & best practices**
  - **Policy guidance**

Policy Guidance

- **Comprehensive Plan**
  - **Goal G: Superior Mobility**
- **Comprehensive Mobility Plan**
  - **Superior mobility across all modes of transportation**
    - **Transportation choices that promote a healthy, active lifestyle**
- **Thoroughfare Plan**
  - **Candidate streets for on-street facilities**
  - **Ped/bike crossings & conflicts**

Meeting Agenda

- Summary – Recent Public Meeting
- Final Draft Route Map
- Plan Recommendations
- Barrier Considerations and Recommendations
- Prioritization
- Other Plan Recommendations

Key Initial Public Input

- Recreation still #1 reason for walking & bicycling
  - However, many trips for shopping or school
- Off-street is the most preferred facility.
- High level of support for on-street bicycle lanes (buffered bike lanes preferred)
- Biggest destinations:
  - Parks & trails, Town Center, Shopping areas
- Significant walking/biking to school among children.
- Barriers are a significant concern

Key Input Since Mid-Project Workshop

- Support for the general goals of the plan and its overall recommendations
- Concern for buffered bike lanes, shared lane markings in specific locations
- Concern over on-street lanes near schools
- Support for crossing Brazos River
- Immediate safety issues
  - Bike lanes on University at US 59
  - Alston Road sidewalks
- Support for improving “culture” of biking
  - Education and awareness

Significant Changes to Draft Since Mid-Project Workshop

Street	Draft Recommendation	Final Recommendation	Reason for Change
Longview Dr.	N/A	Bike Lane	Citizen input
Alcorn Oaks Dr.	Buffered Bike Lane	Bike Lane	Citizen input
Elkins Rd.	Buffered Bike Lane	Sidepath	Citizen input
Commonwealth Blvd.	Buffered Bike Lane	Shared Lane Marking	Citizen input
Knightsbridge Blvd.	Buffered Bike Lane	Shared Lane Marking	Citizen input
Lakefield Blvd.	Buffered Bike Lane	N/A	Citizen Input
Jess Pirtle Blvd.	Sidewalk	Sidepath	Staff initiated
Dairy Ashford Rd. (Julie Rivers to 90A)	Shared Lane Marking	Sidepath	Staff initiated
Sugar Creek Center Blvd.	Sidepath	Bike Lane	Staff initiated
Commerce Green Blvd.	Sidewalk/Sidepath	Bike Lane/Buffered Bike Lane	Staff initiated
US 59 (Sugar Lakes Dr. to Commerce Green Blvd.)	N/A	Sidepath	Staff initiated
Fluor Daniel Dr. (east of SH6)	Bike Lane	Shared Lane Marking	Staff initiated
Fluor Daniel Dr. (west of SH6)	Buffered Bike Lane	Sidepath	Staff initiated
Chatham Ave. (east of University)	Bike Lane	Sidepath	Staff initiated

Goals of the Master Plan

1. Develop an **exemplary network** of facilities for walking and bicycling throughout Sugar Land **that is actively utilized**.

2. Incorporate the most current **standards and best practices for safety**, and provide facility options **for all ages and skill levels**.

3. Along major roadways in the City, **emphasize off-street facilities, but if feasible, also provide on-street facilities for experienced riders.**

Goals of the Master Plan

4. Measurably increase the use of the network for both transportation and recreational uses as it is implemented.

5. Provide **a variety of off-street opportunities** for all types of activities, both active and passive.

6. Maintain compatibility with adjacent private properties – create trails that respect and preserve the rights of adjacent homeowners but that provide access to as many residents of the City as possible.

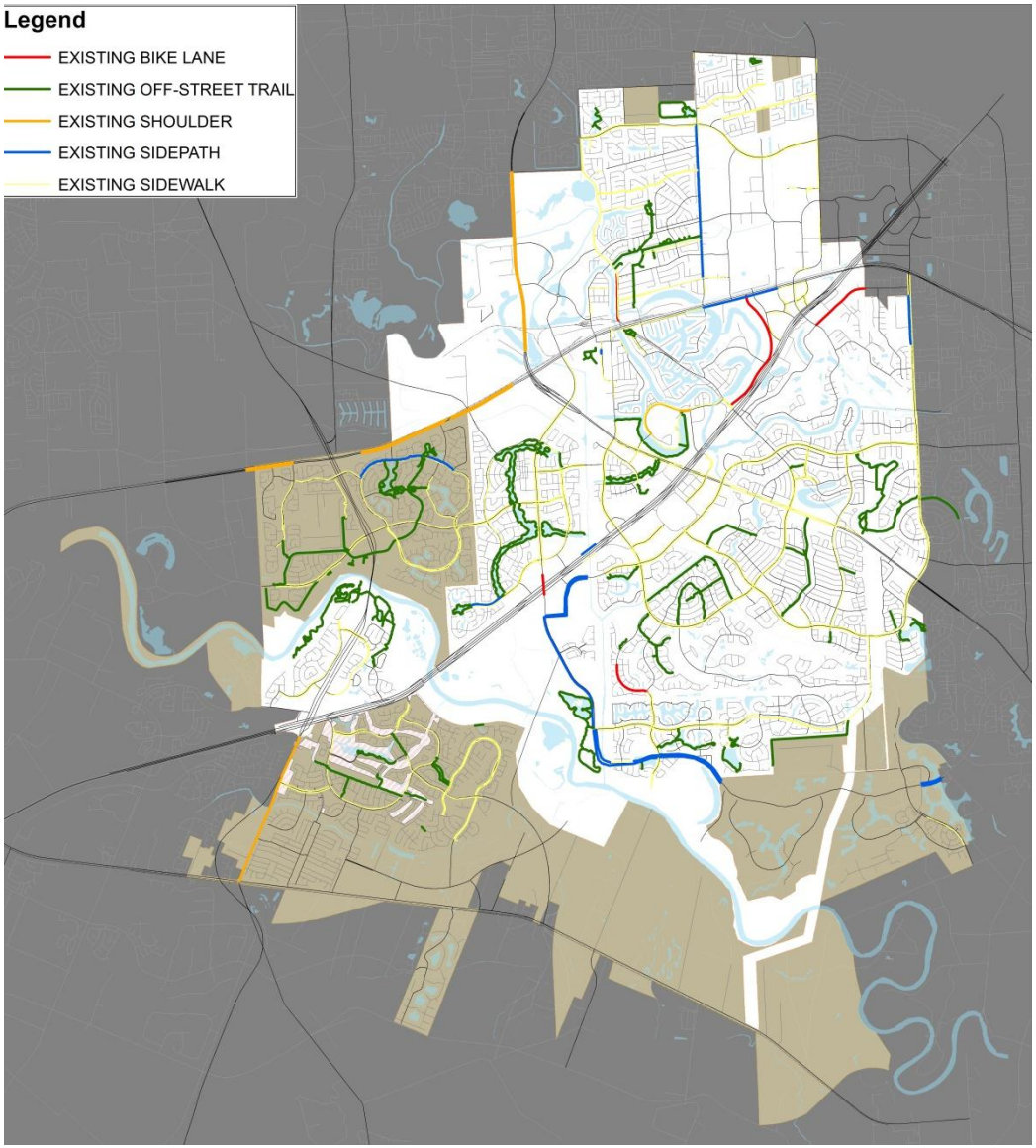
Goals of the Master Plan

7. Actively seek partnerships with other governmental entities, homeowner associations, private property owners and developers to expedite and enhance the creation of the network envisioned by this plan.

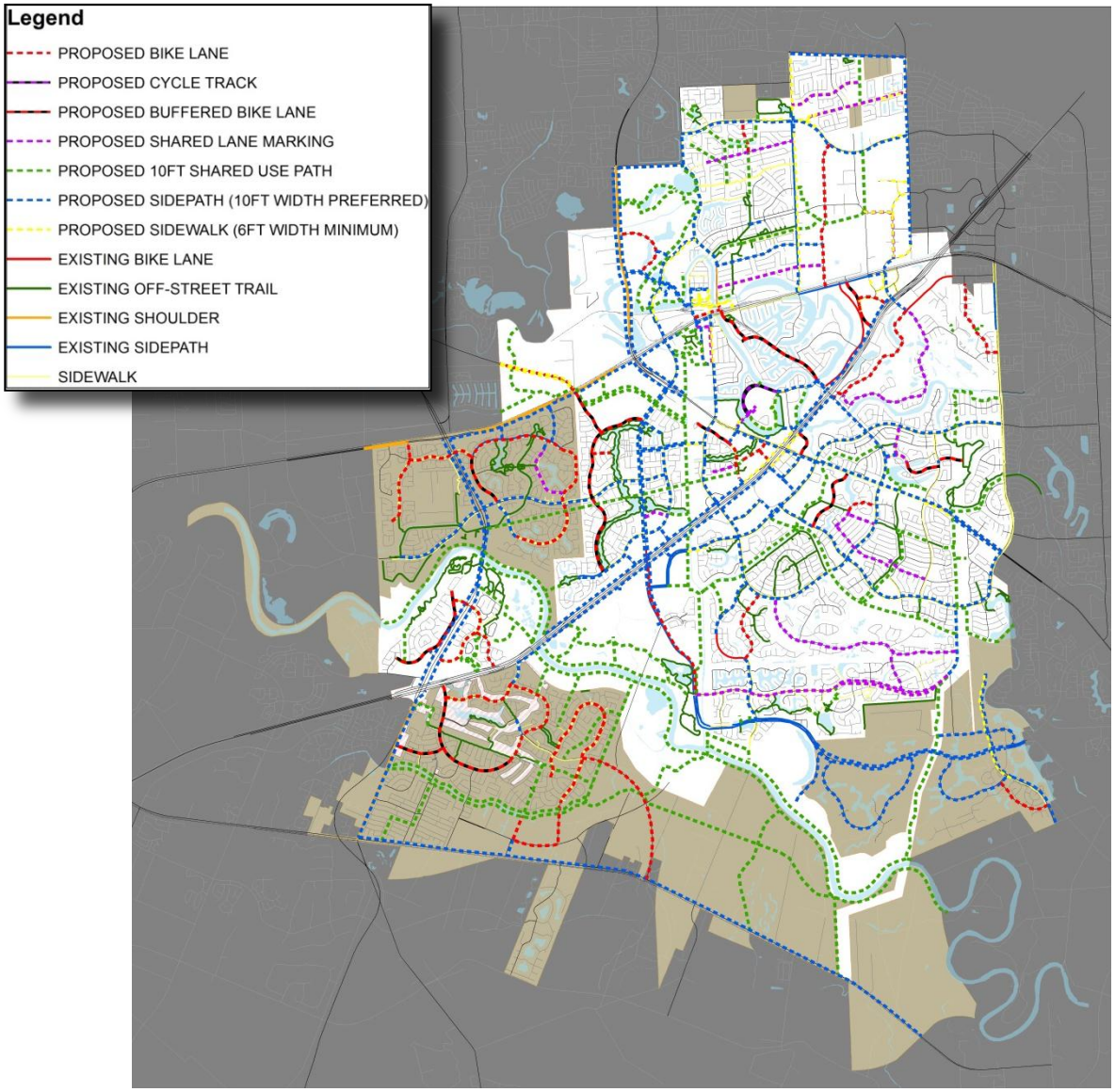
8. Identify ways in which to **accelerate the development of the network**, so that much of the system is in place within a decade.

Review – Final Draft
Facility Recommendations

Existing Facilities in Sugar Land Today



2013 Draft Plan



Prioritization Matrix

Feasibility

- Corridor availability – City owned?
- Potential impact on vehicular mobility?
- How easy will it be to construct?
- Impact on existing landscaping?
- Potential cost range?
- What was the level of citizen support or concern?

Benefits of the Segment being evaluated

- Importance to citywide connectivity
- Helps overcome gap or barrier
- Connects to nearby destinations
- Helps address area with previous accidents
- Potential usage

Pedestrian and Bicycle Facility Prioritization Matrix

Corridor Name: **Score:** 0
Type: **Length:**

Evaluation Element	Percent of Overall	Score - Select One	Points
FEASIBILITY			
1. Corridor Availability	10%		0
Majority of corridor available		3	
Available, requires simple negotiation for use		2	
Requires complex negotiation for use of corridor		1	
2. Impact on Vehicular Mobility	10%		0
No or minimal projected impact on vehicular capacity or mobility		3	
After improvement, roadway capacity still exceeds 2x exist. ADT		2	
After improvement, roadway capacity is between 1.5 and 2x exist. ADT		1	
3. Constructability (Ease of Implementation)	5%		0
Easy corridor to work in, very few constraints		1.5	
Generally easy corridor to work in, some constraints		1	
Constrained corridor, significant physical constraints		0.5	
4. Impact on Existing Corridor Features	5%		0
Impacts less than 5% of existing landscape/trees		1.5	
Impacts between 5 and 20% of existing landscape/trees		1	
May impact more than 20% of existing landscape/trees		0.5	
5. Potential Implementation Cost	10%		0
Lowest 30th percentile by facility		3	
Between 30th and 70th percentile by facility		2	
Highest 30th percentile by facility		1	
6. Citizen Input Regarding this Corridor	10%		0
Positive support received		3	
Neutral feedback or no feedback at all		2	
Received citizen concerns regarding corridor		1	
BENEFIT			
1. Importance to Citywide Connectivity	10%		0
Route with potential to serve major areas of the City		3	
Can connect multiple area neighborhoods		2	
Addresses generally local neighborhood connectivity only		1	
2. Helps overcome Barrier or Existing Gap	10%		0
includes connection across major barrier or closes existing gap		3	
Provides link to route that crosses barrier		2	
Does not cross or link to any barrier crossing or close existing gap		1	
3. Connectivity to Local Destinations	10%		0
Connects to two or more local destinations (school, park or neighborhood center)		3	
Connects to one school park or local destination		2	
Doesn't connect to any local destinations		1	
4. Route with Prior Reported Bicycle or Pedestrian Incident	10%		0
Accident with injury report in last three years with injury		3	
Non-injury incident in last three years		2	
None reported along corridor in last three years		1	
5. Potential Usage	5%		0
Within 1 mile from Sugar Land Town Square		1.5	
Higher Density area or near Citywide Attraction		1	
Limited Nearby Population		0.5	
6. Potential Demonstration/Catalyst Project	5%		0
Provides unique facility/demonstrates functionality of idea		1.5	
Not considered a demonstration or catalyst project		0	
Total	100%		0

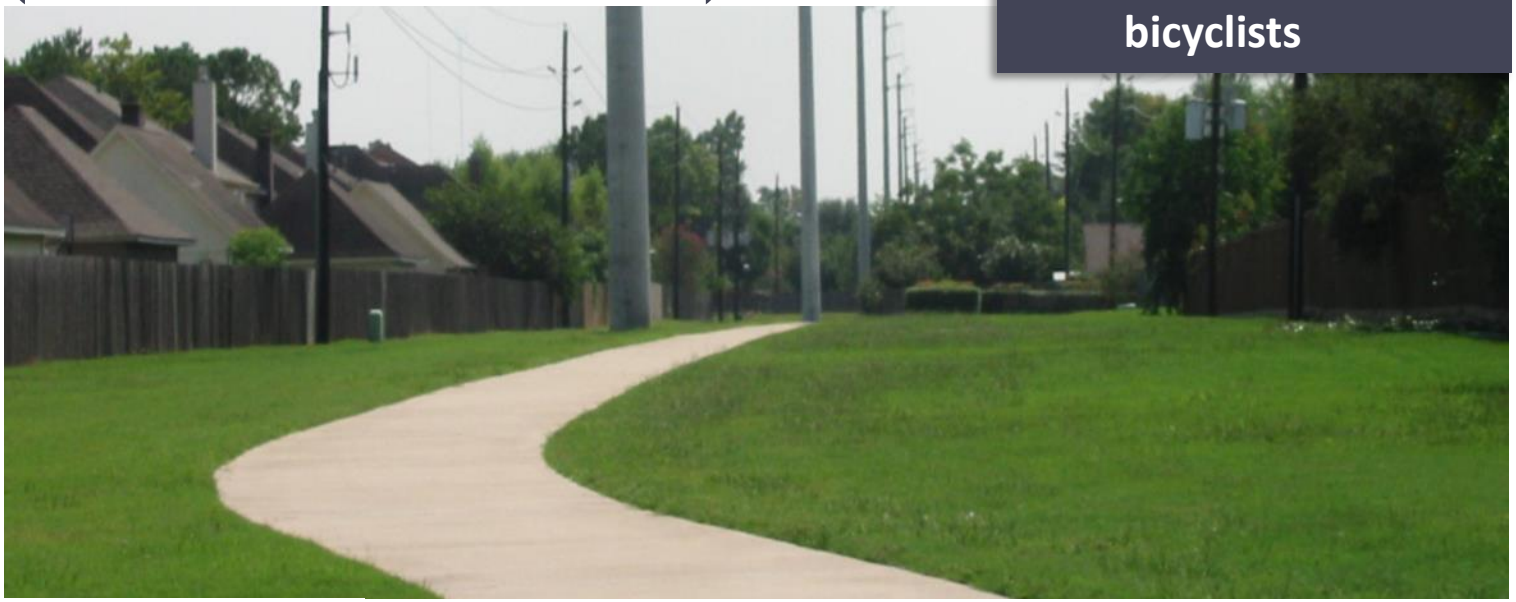
Four Priority Levels

YEARS 1 – 10 +/-	▪ **Immediate** (low cost projects, can be done now, possible funding identified) (2-3 years) ▪ **Near Term** (critical gap connectors, etc.) ▪ **Mid Term** (builds on near term projects, etc.)
YEARS 10 +	▪ **Long term** (after 10 years, within ETJ area, etc.)

Goal is development of majority of immediate, near term, and mid term projects within 10 years.

SHARED-USE PATH (OFF-STREET TRAIL)

Width: 8 ft. min. (10 ft. preferred)
User: pedestrians & bicyclists



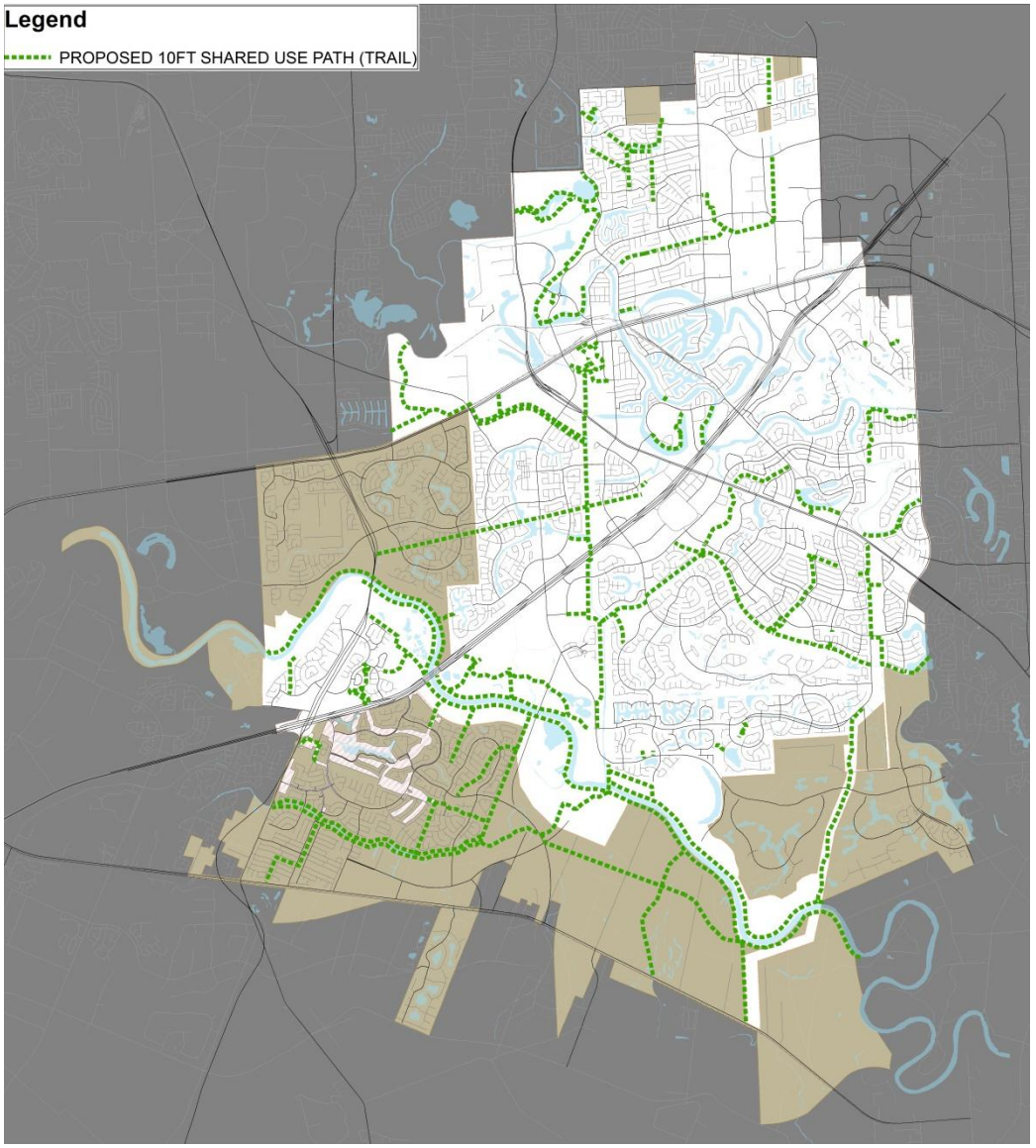
Where:
Drainage, utility or greenbelt corridors

Advantages:
Attractive for riders of many skill levels, can enhance connectivity citywide

Disadvantages:
High cost, requires suitable corridor, concern at street crossings

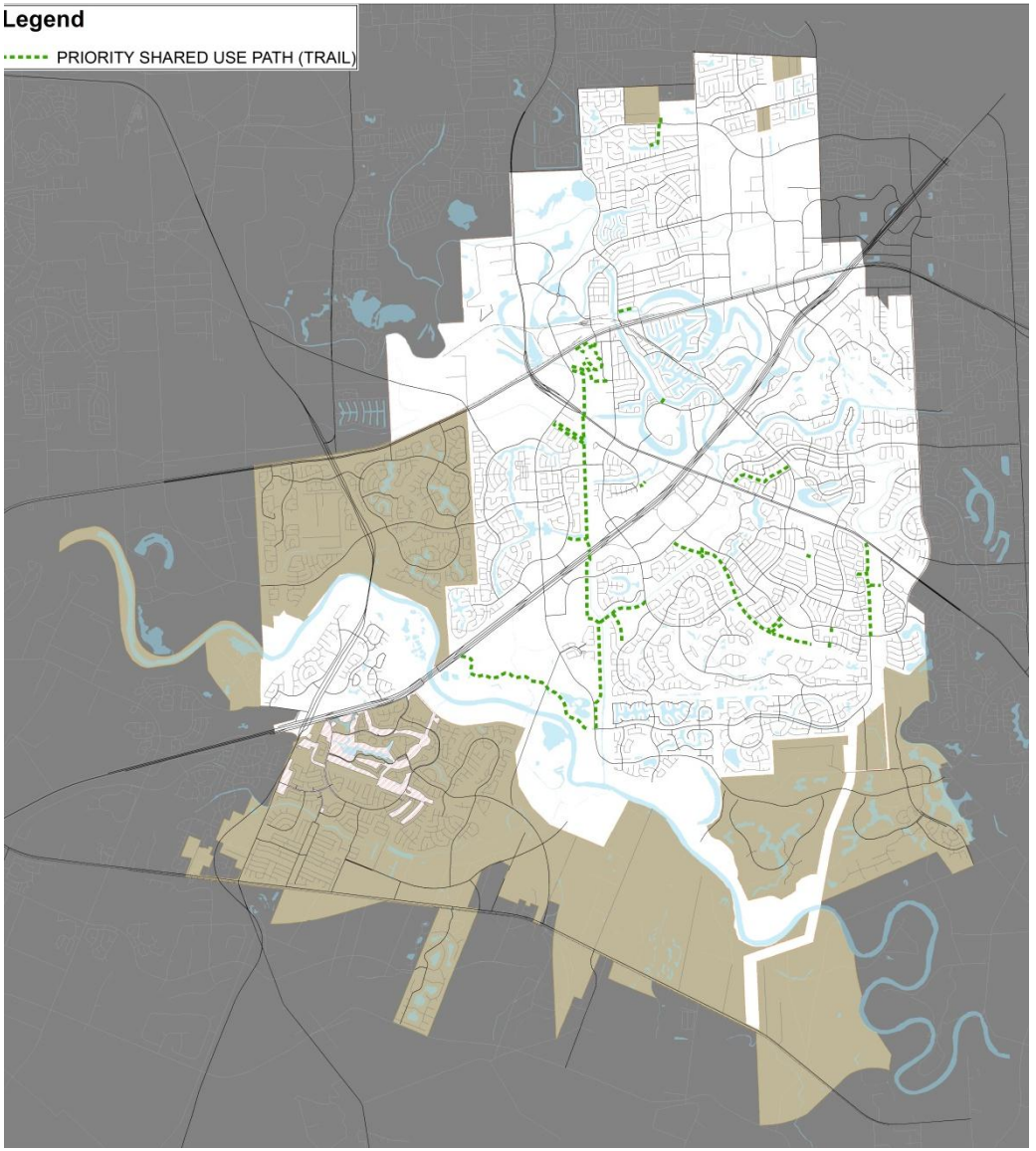
Cost: High

All Proposed Off-Street Shared Use Paths (Trails)



High Priority Proposed Off-Street Shared Use Paths (Trails) Years 1-10+/-

Potential High Priority Project Costs = $14 M



SIDEPATH (ADJACENT TO ROADWAY)

Width: 10’ minimum, 8’ in constrained areas)
User: pedestrians & bicyclists

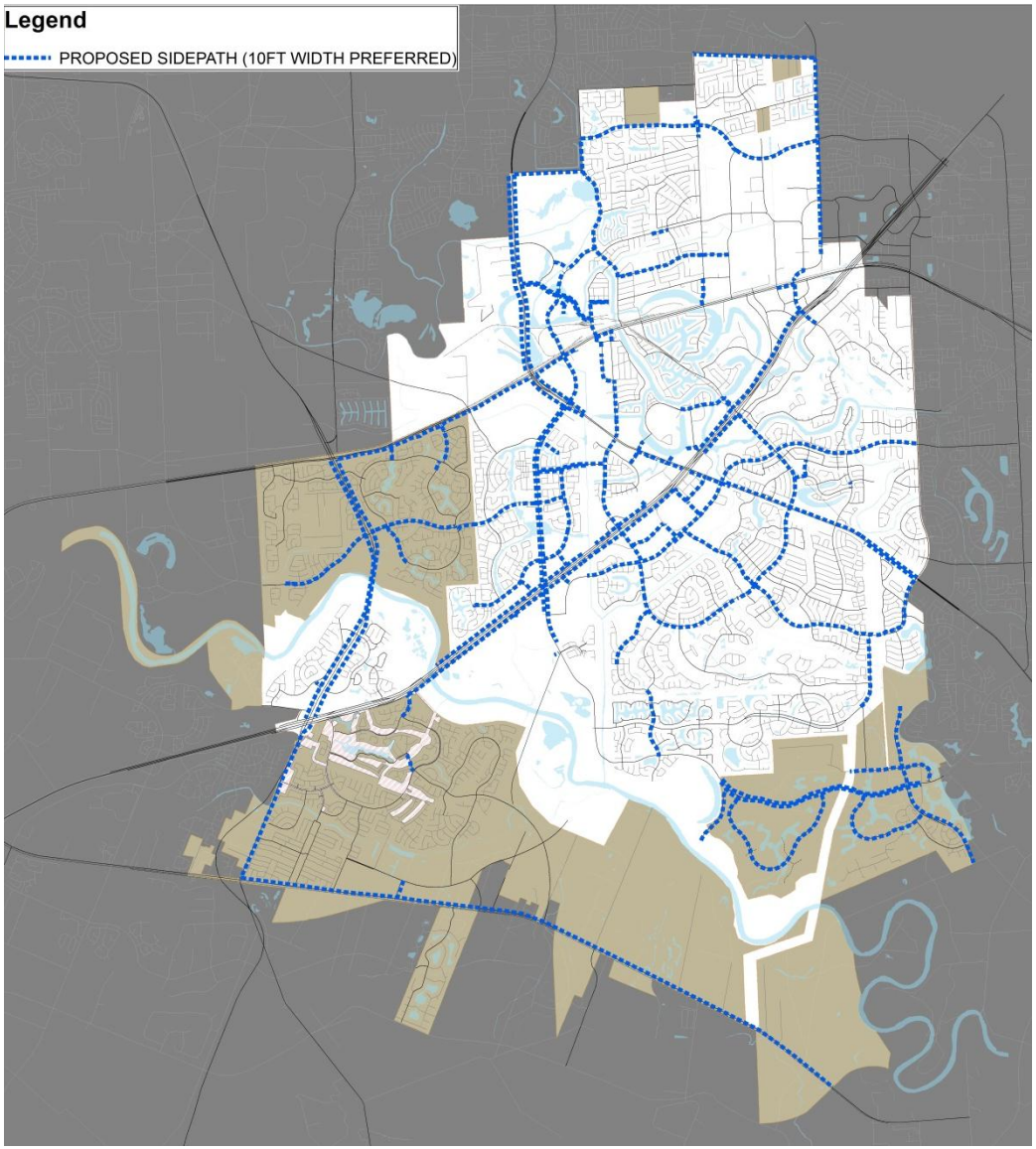
Where: Streets with adequate parkway width

Advantages: More appealing to novice or young riders, can connect areas w/o greenbelt corridors

Disadvantages: High cost, less appealing to experienced riders, less predictability at intersections

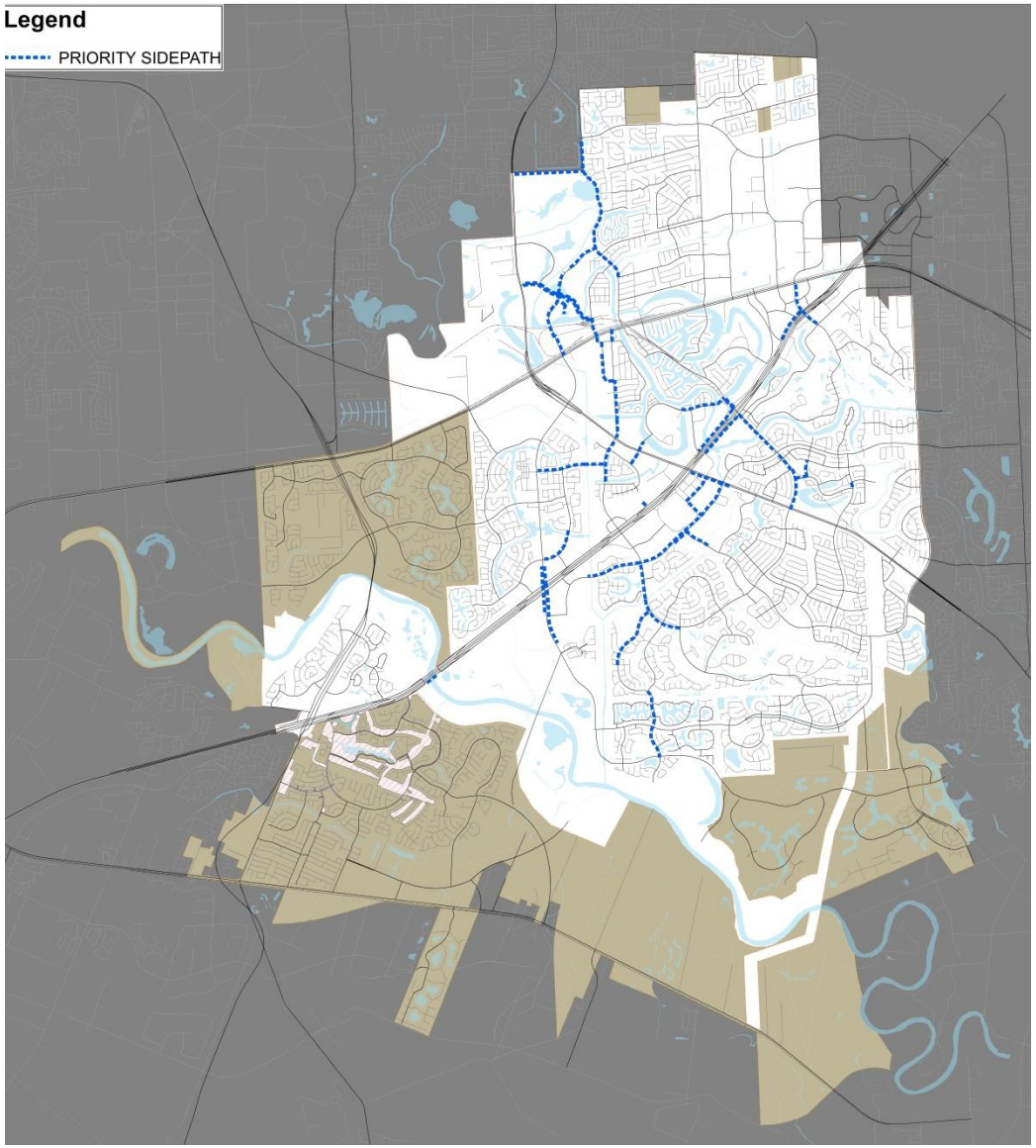
Cost: High

All Proposed Sidepaths



High Priority Proposed Sidepaths Year 1-10

Potential High Priority Project Costs = $15.5 M



On-Street Facilities

- Off street facilities preferred
  - Limitations
    - Connectivity / ROW limited (can't get everywhere)
    - Cost prohibitive – delays implementation
- Opportunities for on-street facilities
  - Excess capacity
  - Low traffic speeds
  - Wide lanes
  - Connections to key destinations
  - Cost effective

BIKE LANES

Width: 5 ft. minimum
User: bicyclists



Where: Streets with lower traffic volumes and speeds

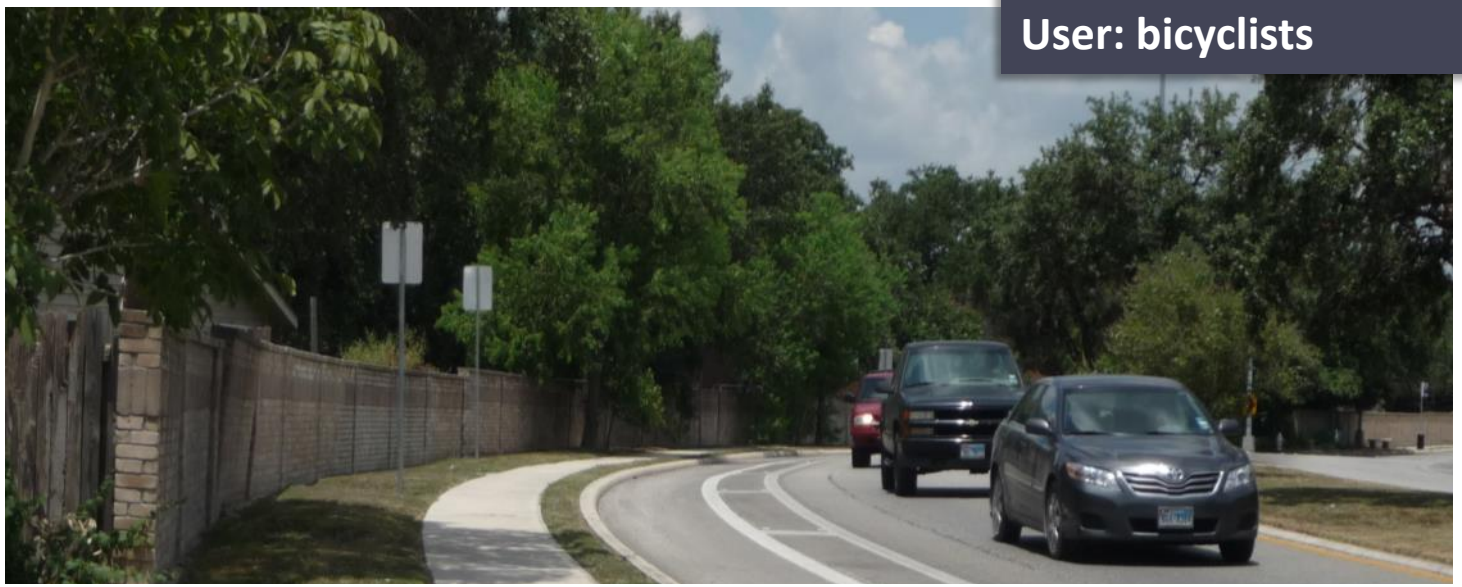
Advantages: Very inexpensive, easy to implement in many areas with no other option

Disadvantages: Some riders may not be comfortable near cars

Cost: Very low

COMFORT or BUFFERED BIKE LANES

Width: 5 ft. minimum plus striped buffer (min. 24” width)
User: bicyclists



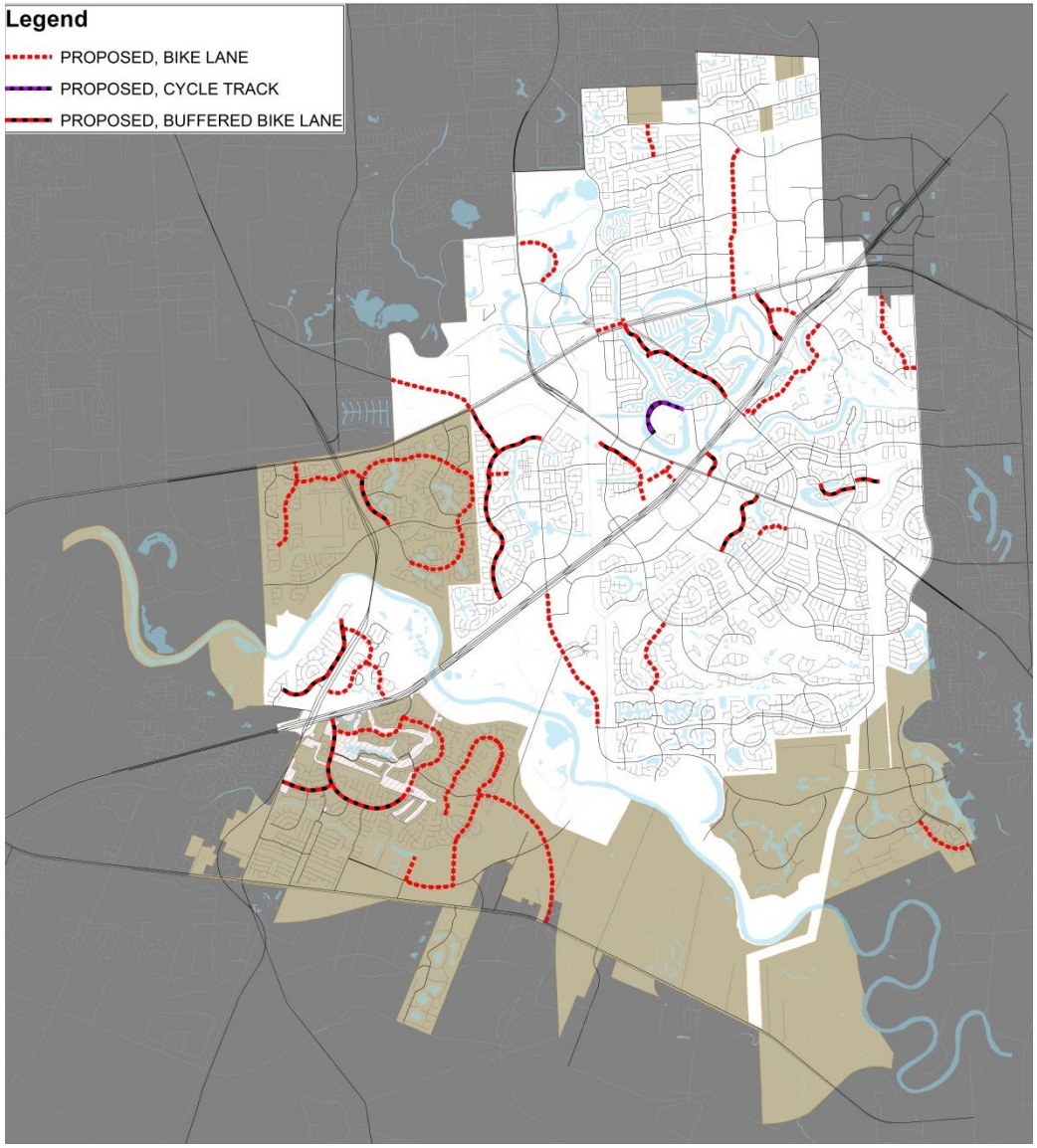
Where: Street with sufficient pavement width

Advantages: Very inexpensive, easy to implement, adds extra buffering from traffic, more appealing to many average riders

Disadvantages: Requires wider pavement width

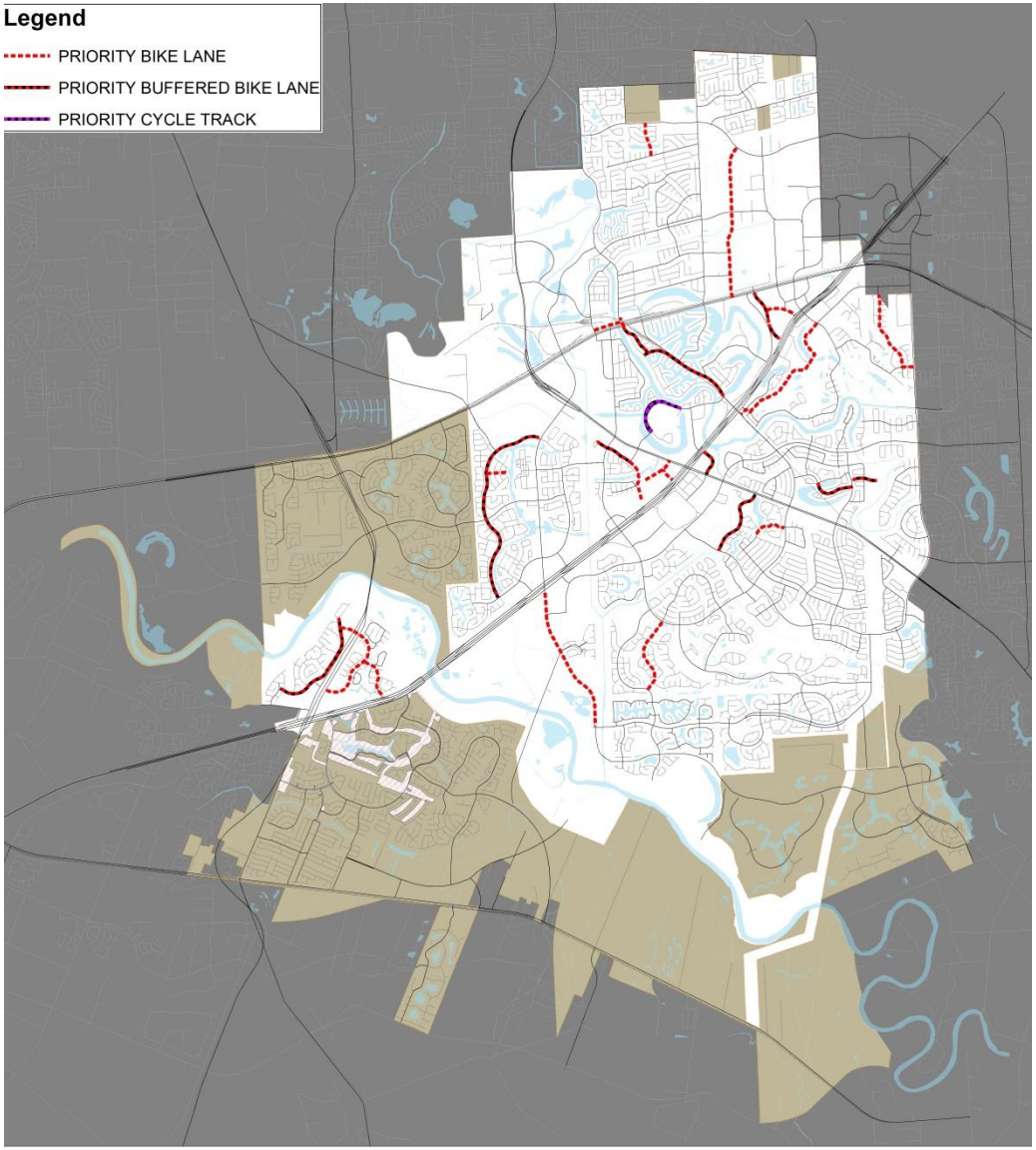
Cost: Very low

All Proposed Bike Lanes and Buffered Bike Lanes



High Priority Proposed Bike Lanes and Buffered BL Year 1-10 +/-

Potential High Priority Project Costs = $1,375,000

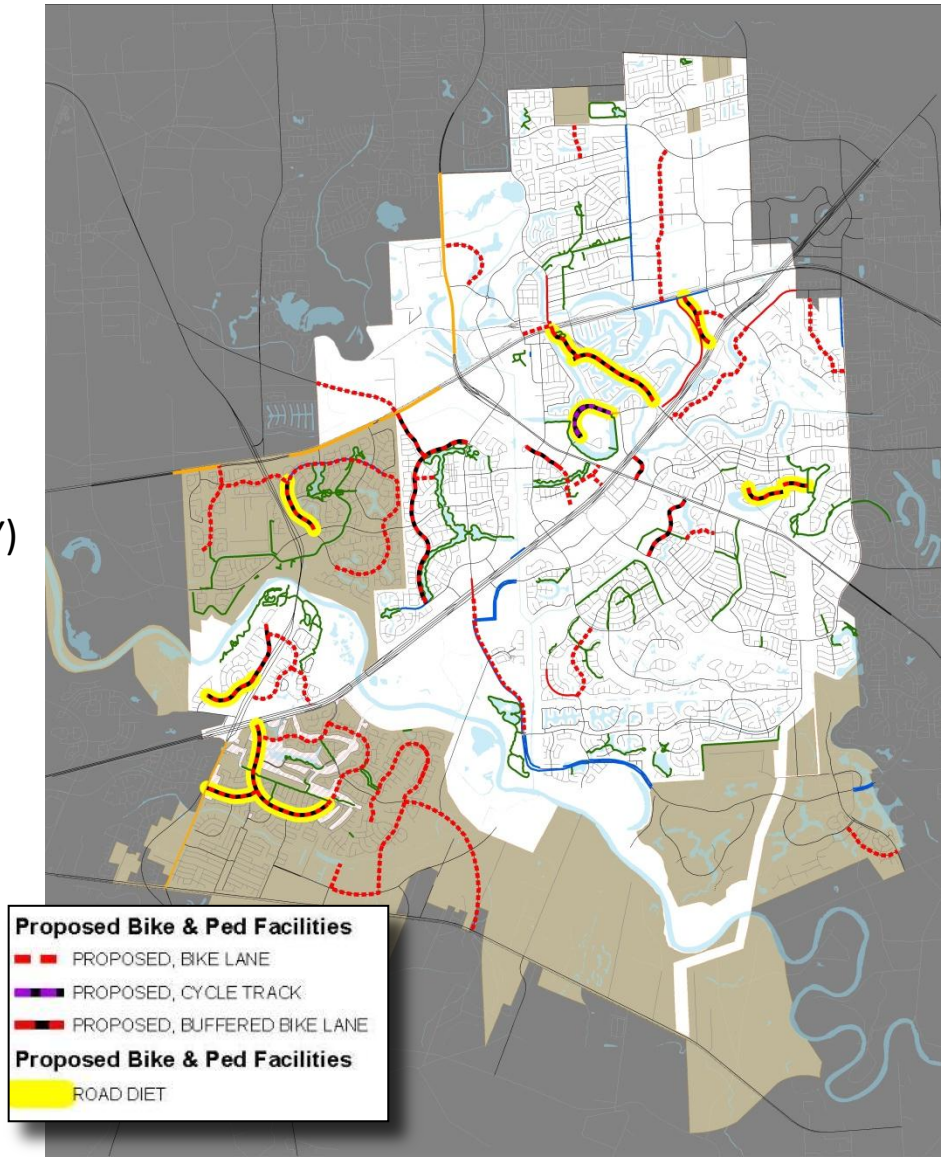


Potential Road Diets

*(Replace a lane)**

<u>CITY LIMITS</u>
EDGEWATER DR. (PORTIONS ONLY)
CREEKBEND DR. (PORTIONS ONLY)
LOST CREEK BLVD.
SUGAR LAKES DR.
BAYVIEW DR.
COMMERCE GREEN BLVD.
WIMBERLY CANYON (PORTIONS ONLY)

<u>ETJ LIMITS</u>
HOMEWARD WAY (PORTIONS ONLY)
GREATWOOD PARKWAY (PORTIONS ONLY)
SANSBURY LANE



SHARED LANE MARKINGS

Location in lane: varies based on presence of parking
User: bicyclists & cars

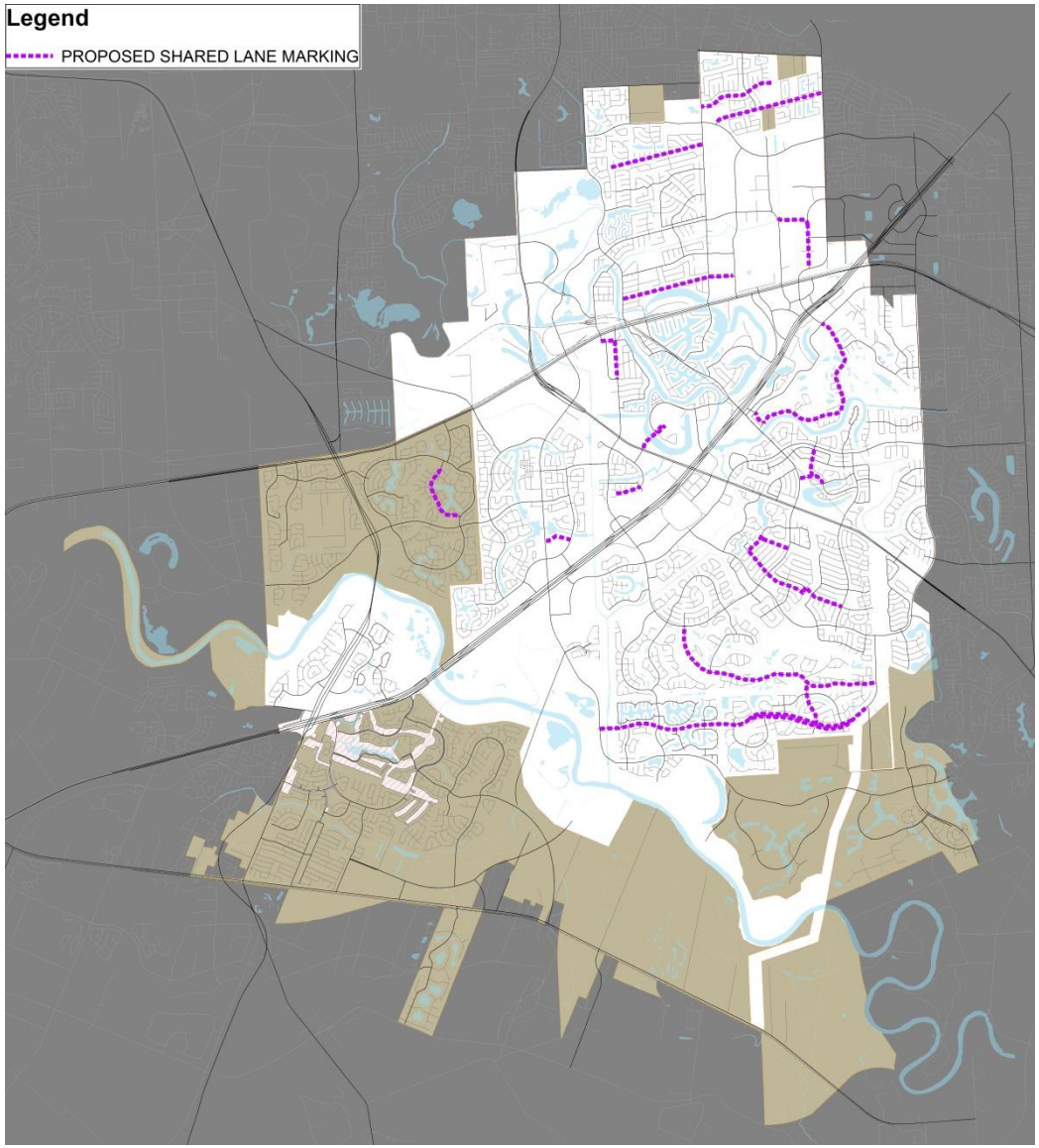
Where: Streets with appropriate volumes/speeds, and without pavement width for bicycles lanes

Advantages: Very inexpensive, easy to implement in many areas with no other option available

Disadvantages: Some riders may not be comfortable near cars

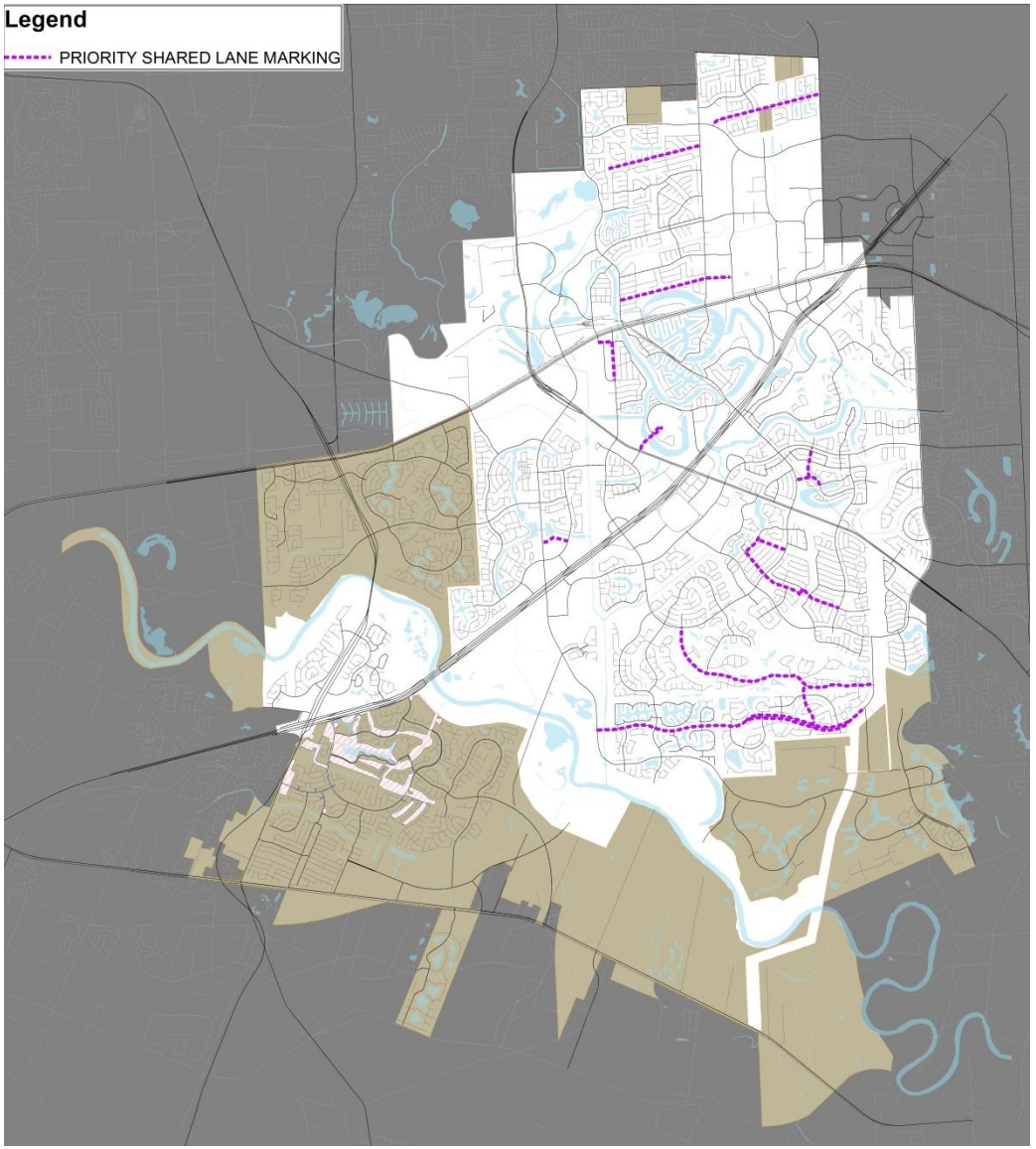
Cost: Very low

All Proposed Shared Lane Markings



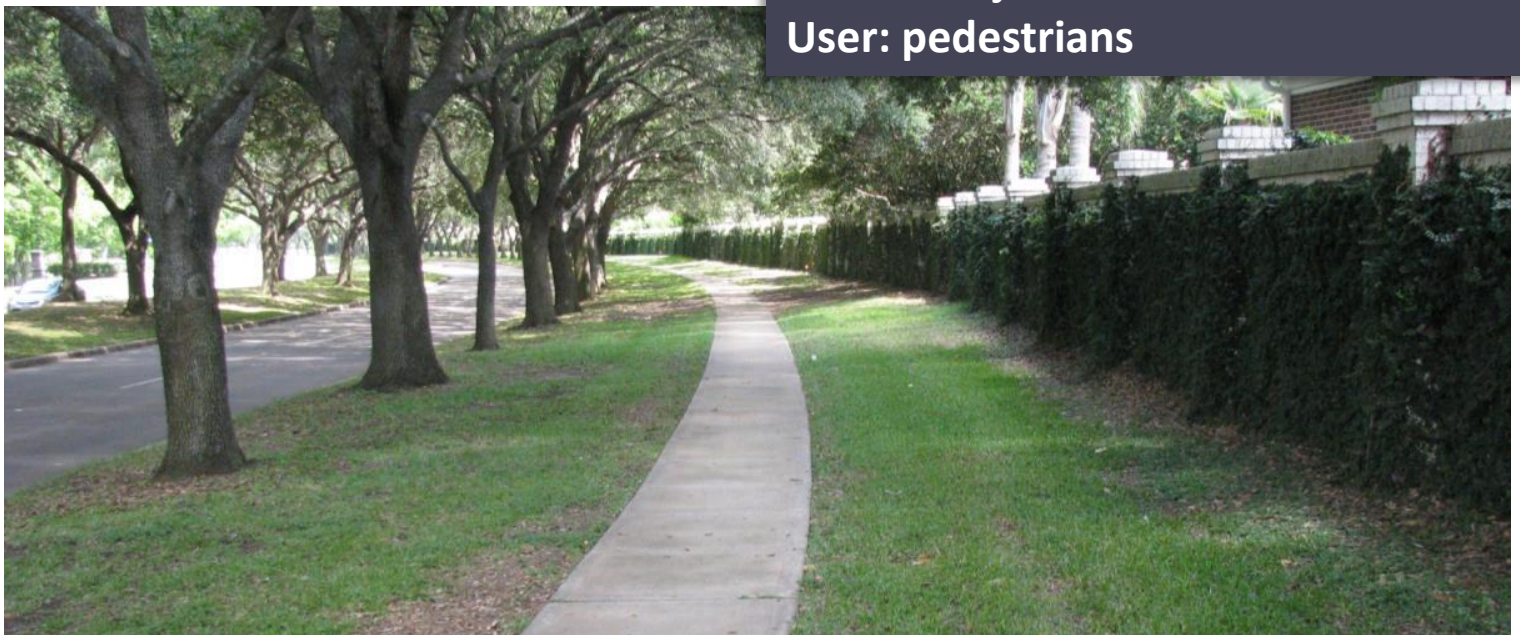
High Priority Proposed Shared Lane Markings Year 1-10+/-

Potential High Priority Project Costs = $295,000



SIDEWALK

Width: 5 ft. min., 6’ wide along major collectors and arterials
User: pedestrians



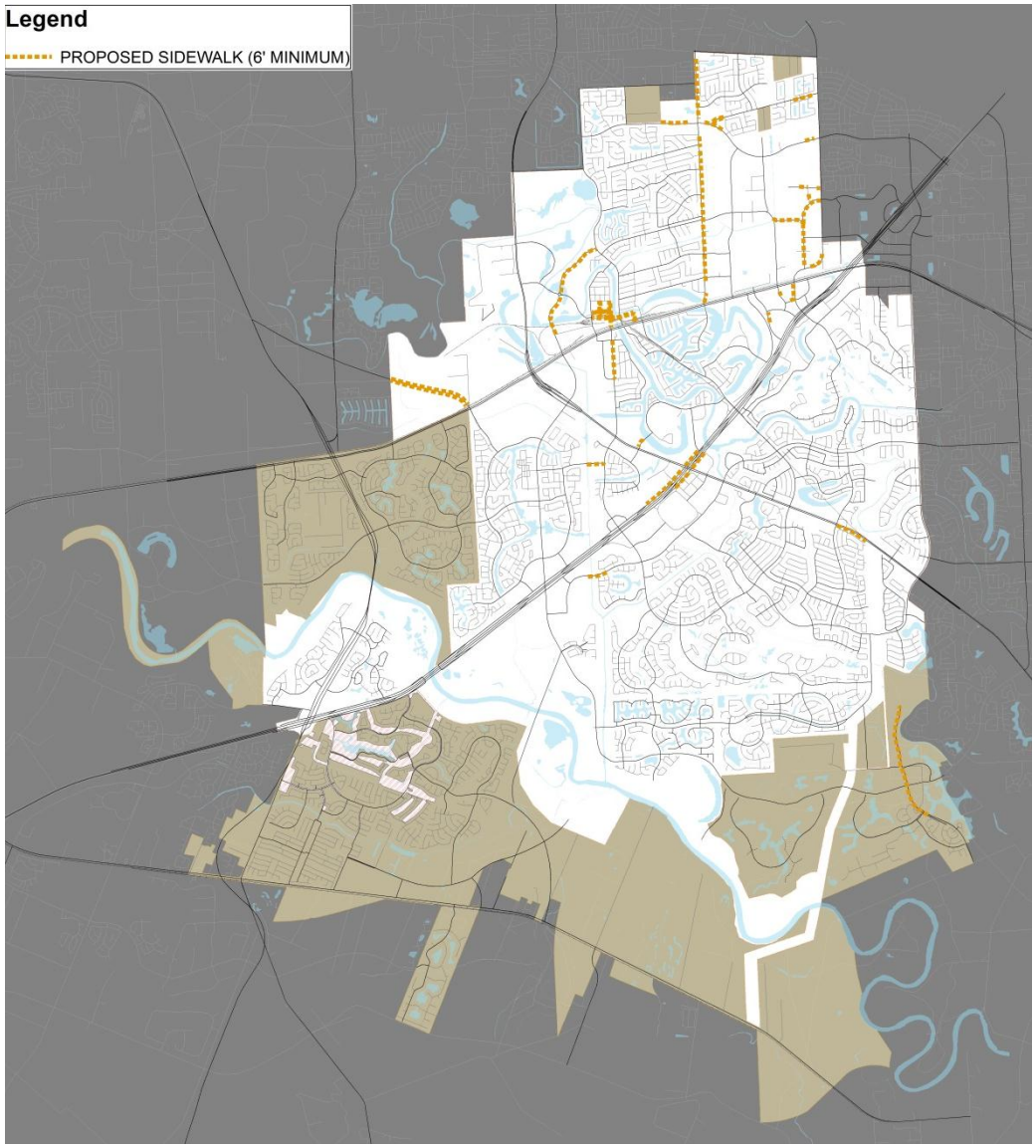
Where: ROW not available for a sidepath, mature trees already exist

Advantages: Many sidewalks already in place by developers

Disadvantages: Unless widened, cannot accommodate multiple users, or bicyclists

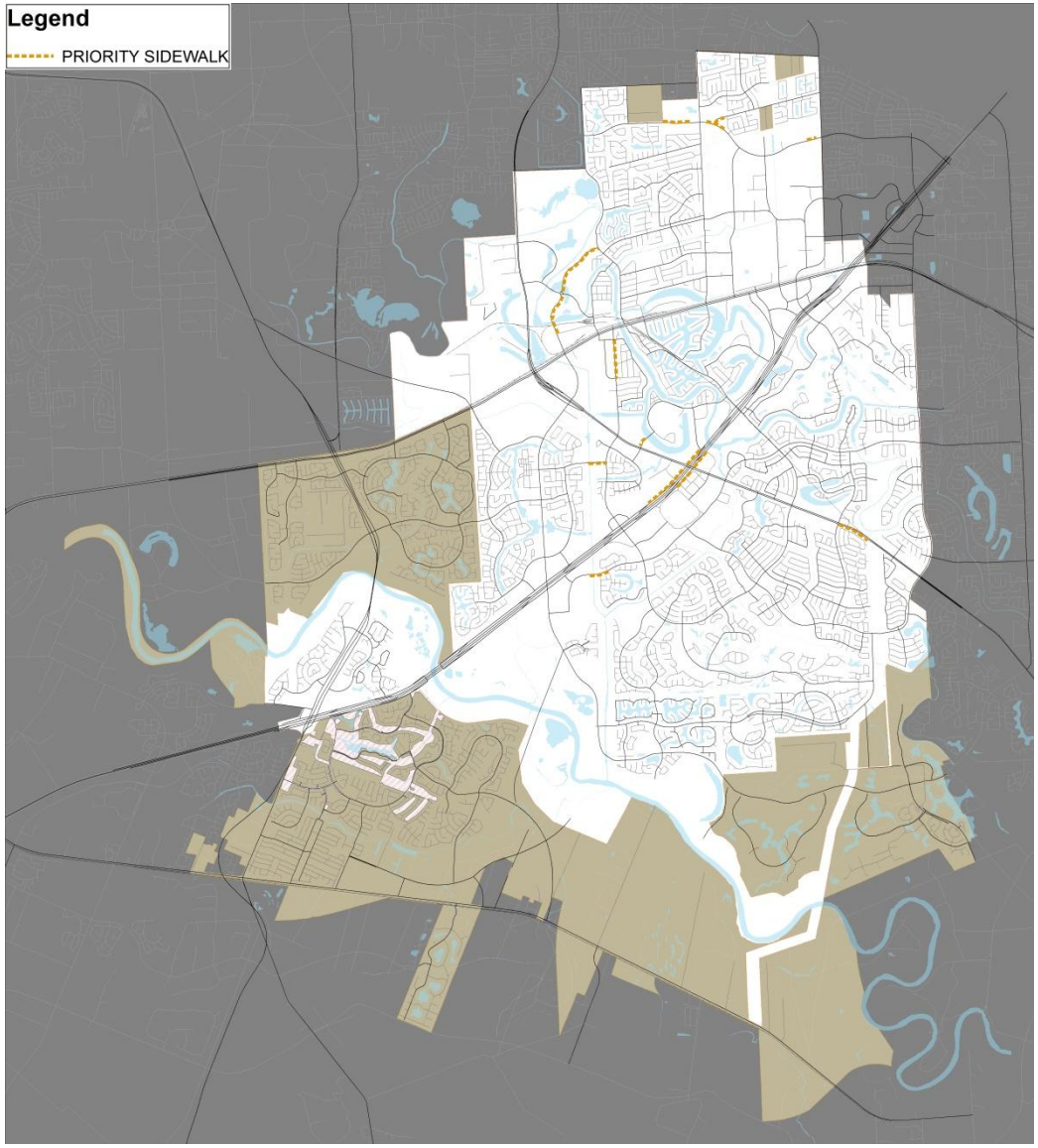
Cost: Medium

All Proposed Sidewalks



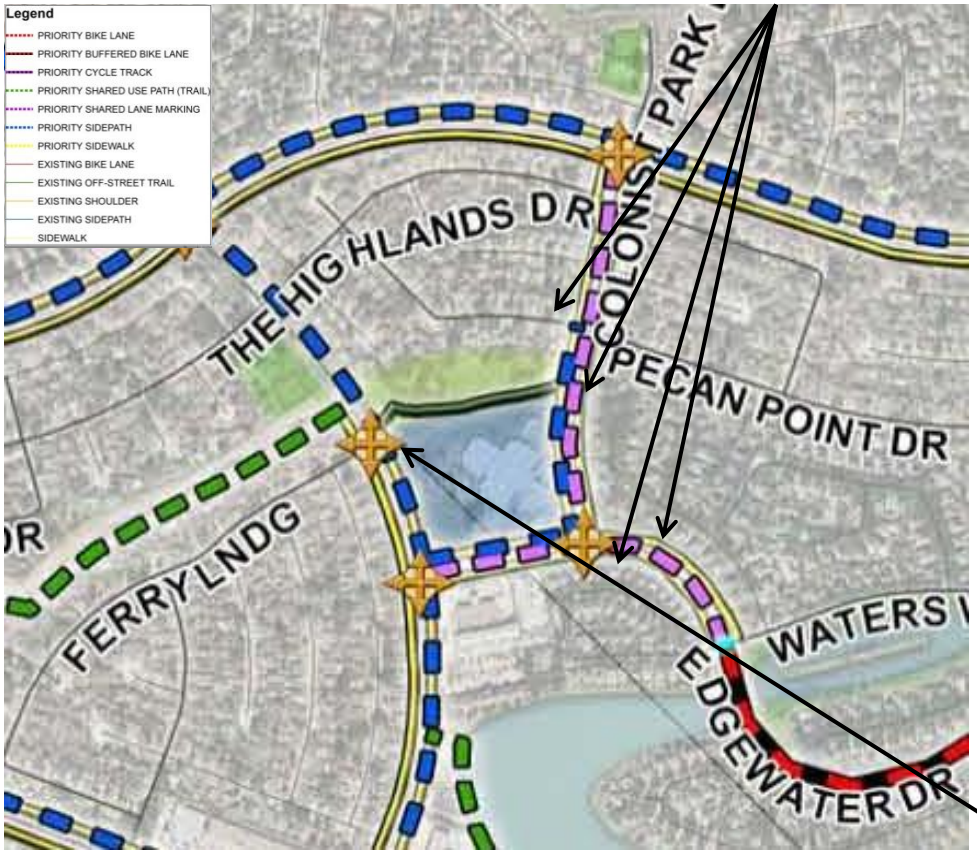
High Priority Proposed Sidewalks Year 1-10

Potential High Priority Project Costs = $936,000



Proto-typical Solution at School Site (Highlands Elem.

Widen sidewalk from 4’ to 6’

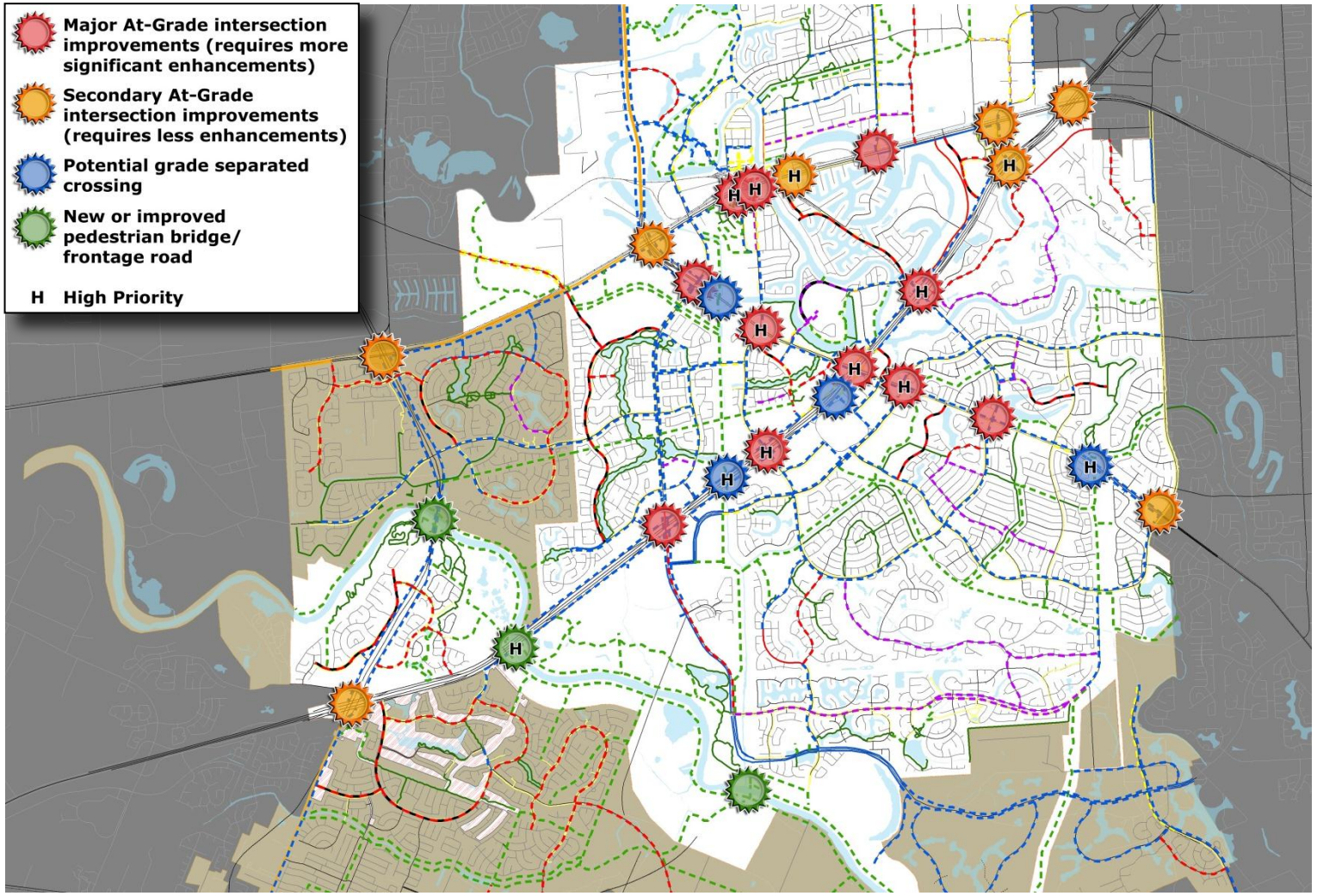


Example of a pedestrian actuated crossing signal.

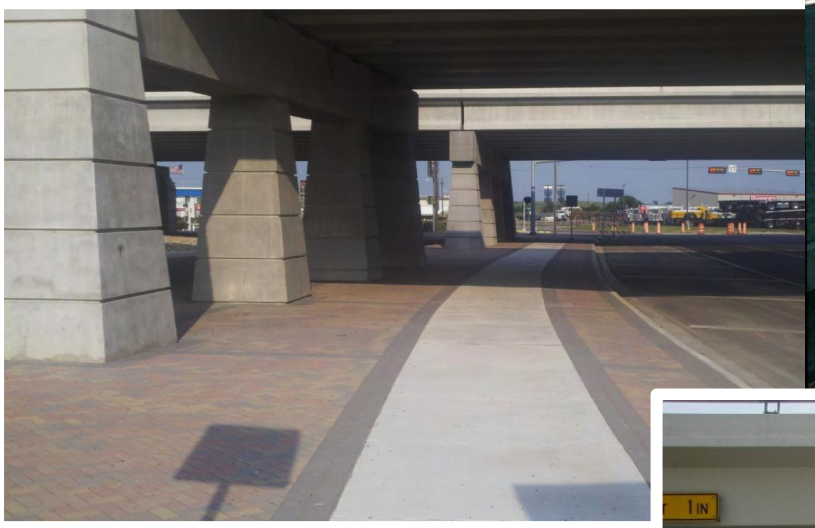
Barriers Solutions

- Short Term
  - Crossing enhancements
  - Key crossings
  - Demonstrate demand over time
- Long term
  - Dependent on demonstrated demand
  - Ped/bike bridge over US 59 and SH 6

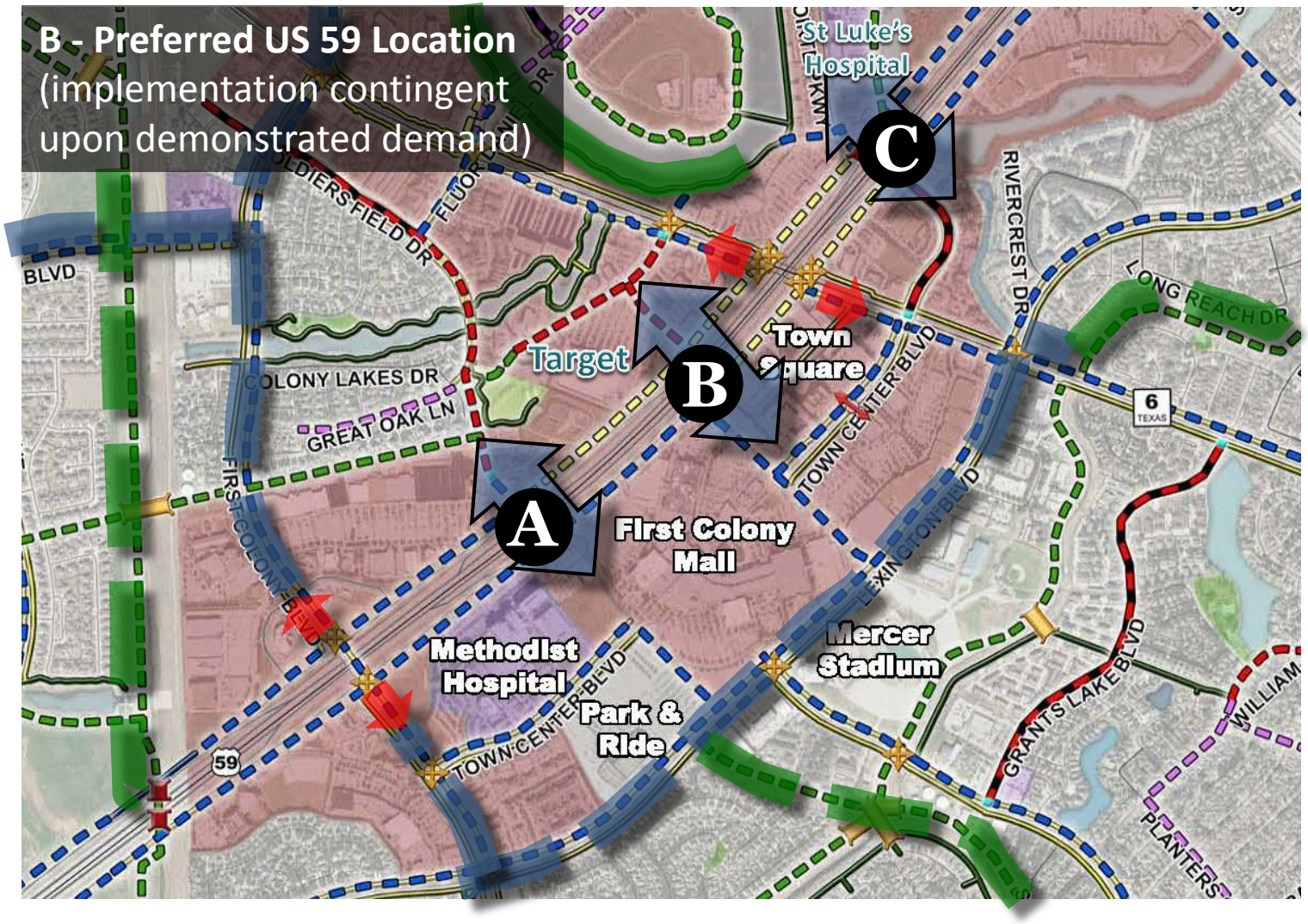
Potential Barriers



Barrier Solutions

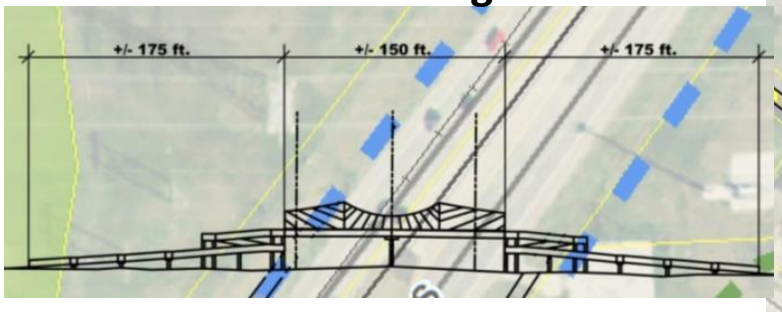


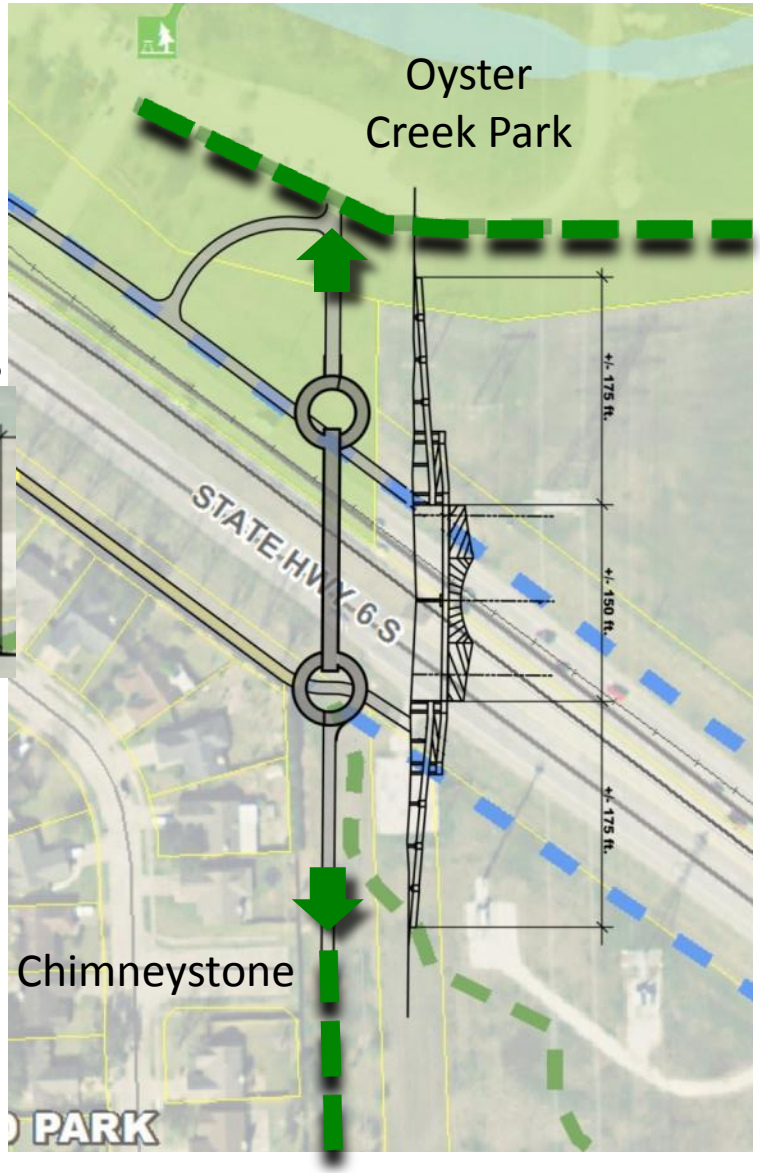
TOWN CENTER – US 59 CROSSING



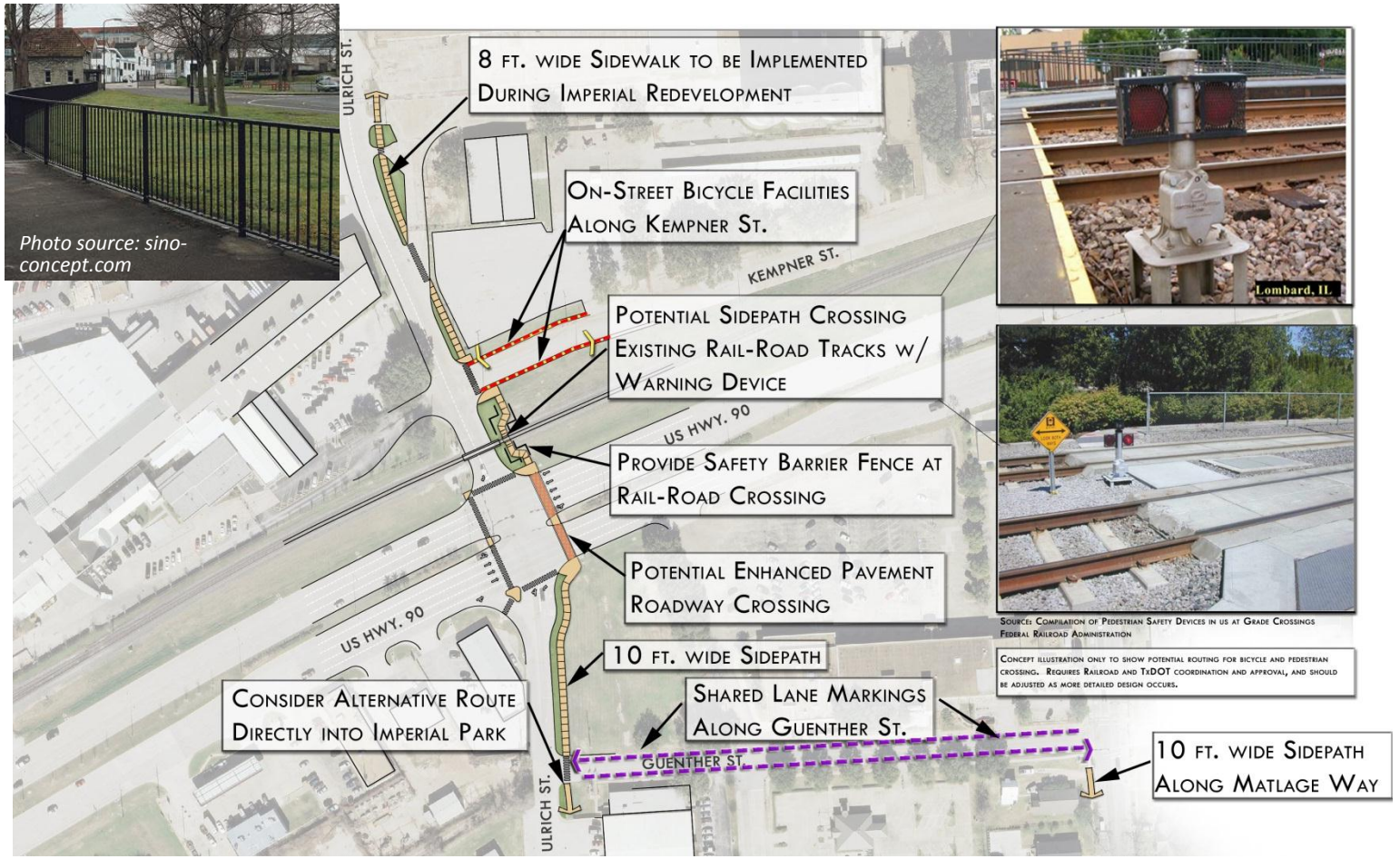
GRADE SEPARATED CROSSING – SH 6

Bridge Dimensions

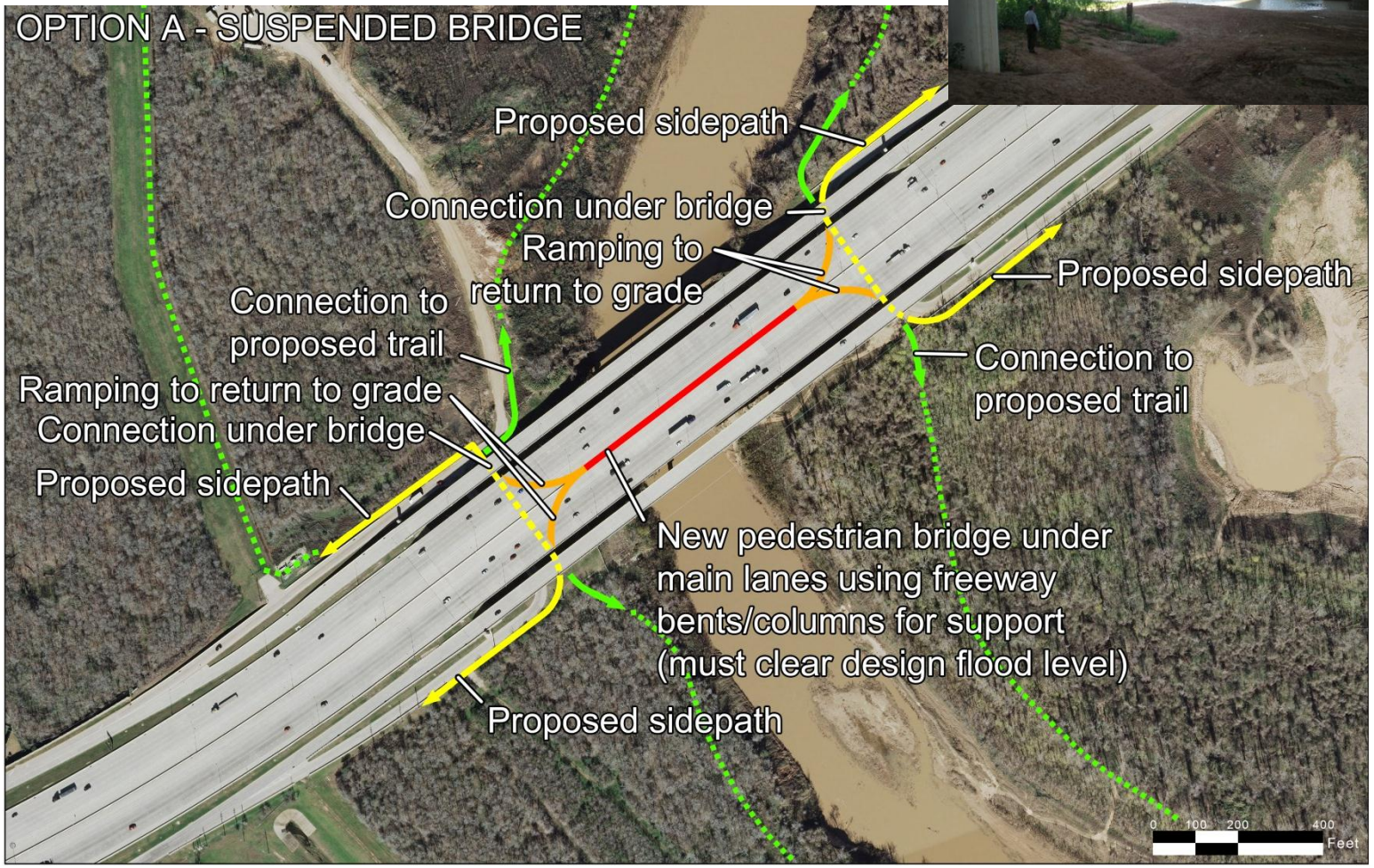




SIDEPATH CROSSING- ULRICH AT 90A and RAILROAD CROSSING



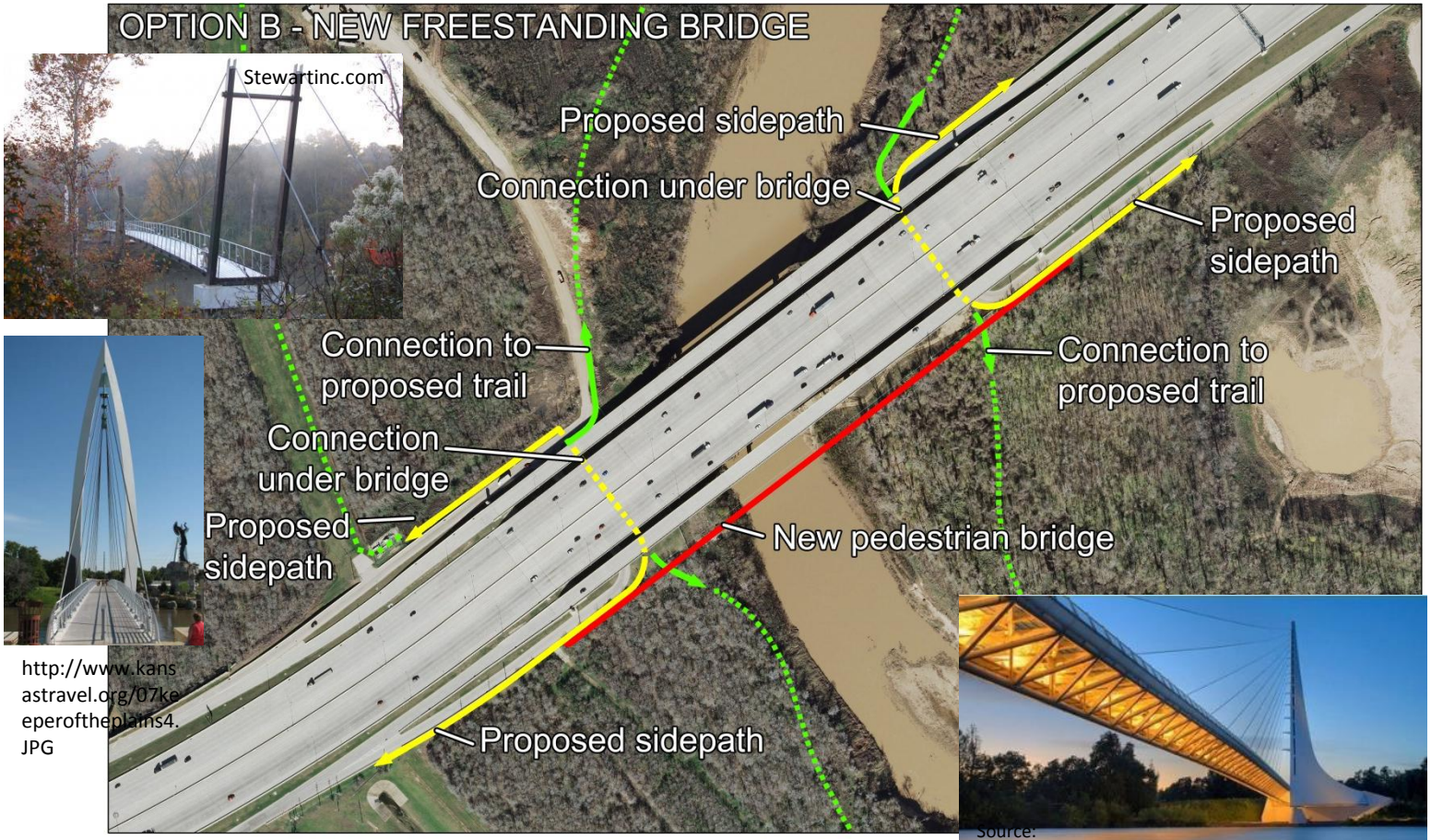
BRIDGE CROSSINGS AT US 59 AND THE RIVER



Potential Bridge Suspended Under US59

Typical amenities could include illumination, way finding, trash cans, etc.

BRIDGE CROSSINGS AT US 59 AND THE BRAZOS RIVER

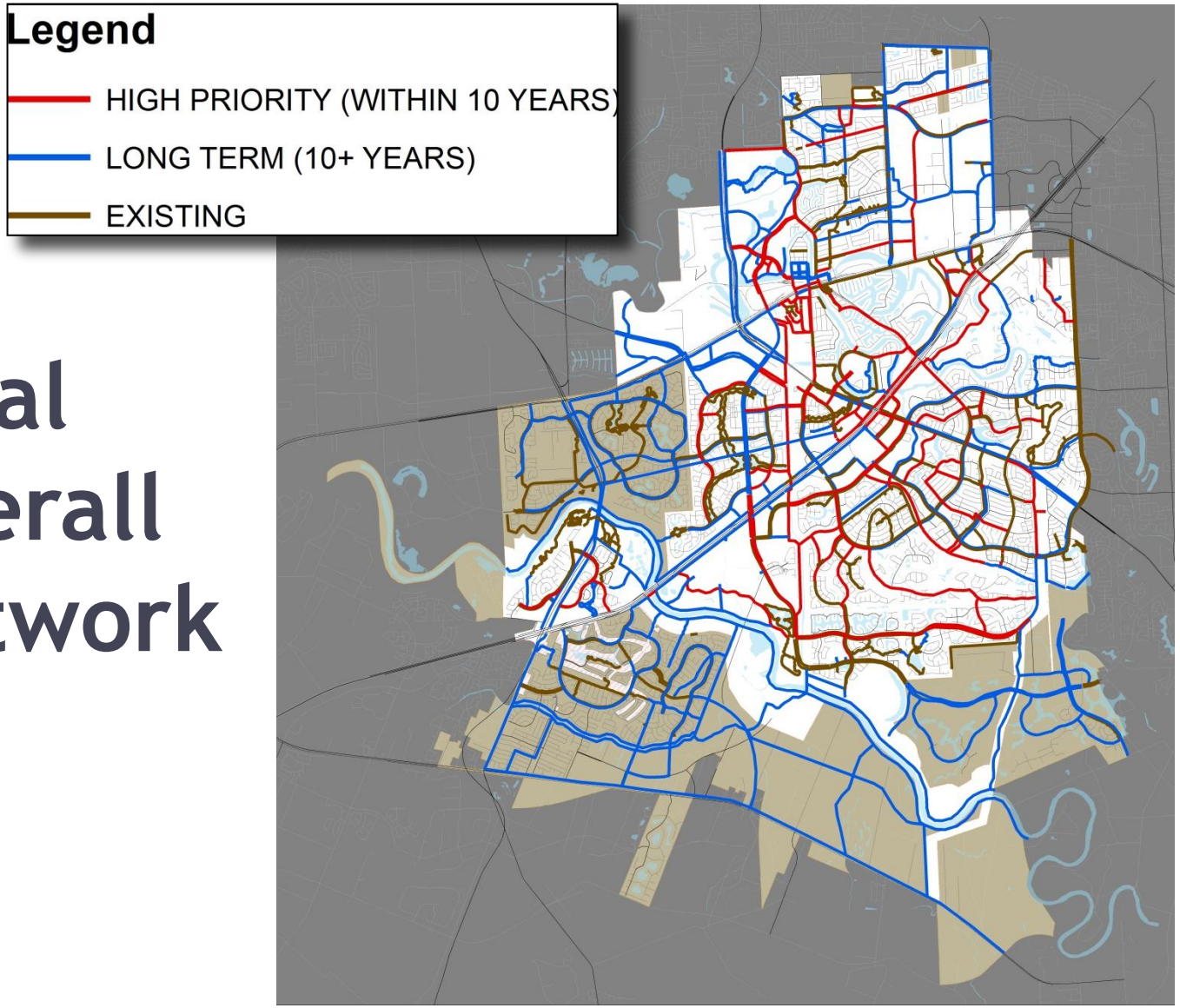


Priority Enhancements to Resolve Barriers

Facility Location	Recommended Improvements	Projected Cost Range +/-
Improve major at-grade US 59 crossings for ped/bike		
Hwy 6 at US 59 (west side)	Relocate U-turn to provide 12' wide pedestrian zone with pavers, protective wall, enhanced lighting, landing and sidewalks on north side	$450,000 to $650,000
Sweetwater/First Colony at US 59 (west side)	Enhanced pedestrian area with pavers, lighting, landing and ramp widening	$200,000
University (both sides)	Ramp widening, paver walking areas	$150,000
Williams Trace at US 59 (west side)	Widen pedestrian zone on SB side of Williams Trace under bridge, add paver walkways, enhanced lighting, ramp widening	$150,000 to $200,000
Dairy Ashford at US 59 (west side)	Widen pedestrian zone on SB side of Dairy Ashford under bridge, add paver walkways, enhanced lighting, ramp widening	$150,000 to $200,000
Other Barrier Improvements		
Hwy 6 Pedestrian Bridge	Near Oyster Creek Park, 250' span + approach ramps	$2,000,000 to $3,000,000
Enhanced Crossing at Ulrich/Hwy 90A	Enhanced pavement crosswalk, sidepath w/ diverter fencing & pedestrian level RR warning signals	$200,000 to $300,000
Pedestrian Bridge over Brazos River at US 59	At US 59 – span length approximately 800 to 900' +/- assumes use of US 59 bridge as supports for pedestrian bridge	Option A - $3,000,000 to $4,500,000
Potential Cost Range		**$6,300,000 to $9,200,000 +/-**

HIGH PRIORITY RECOMMENDATIONS

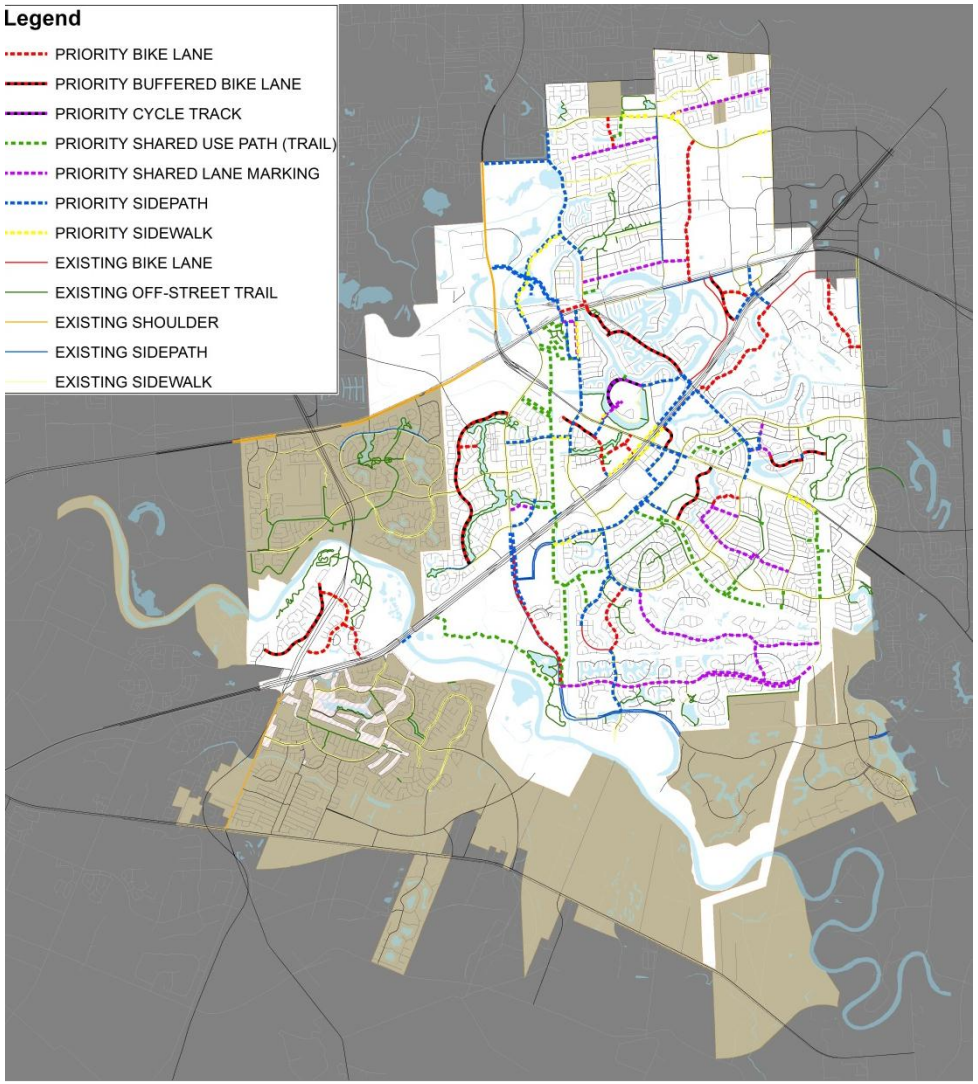
Final Overall Network



High Priority Facilities

Upon completion of the High Priority Recommendations (Year 1 to 10+/-), Sugar Land will have*:

- 31 miles of sidepaths
- 62 miles of shared use paths (trails)
- 14 miles of bike lanes
- 8 miles of buffered bike lanes
- 0.7 miles of cycle tracks
- 14 miles of shared lane markings



**includes existing, immediate, near term, and mid term*

Existing Facilities

High Priority Facilities - Existing

Sugar Land Pedestrian & Bicycle Master Plan

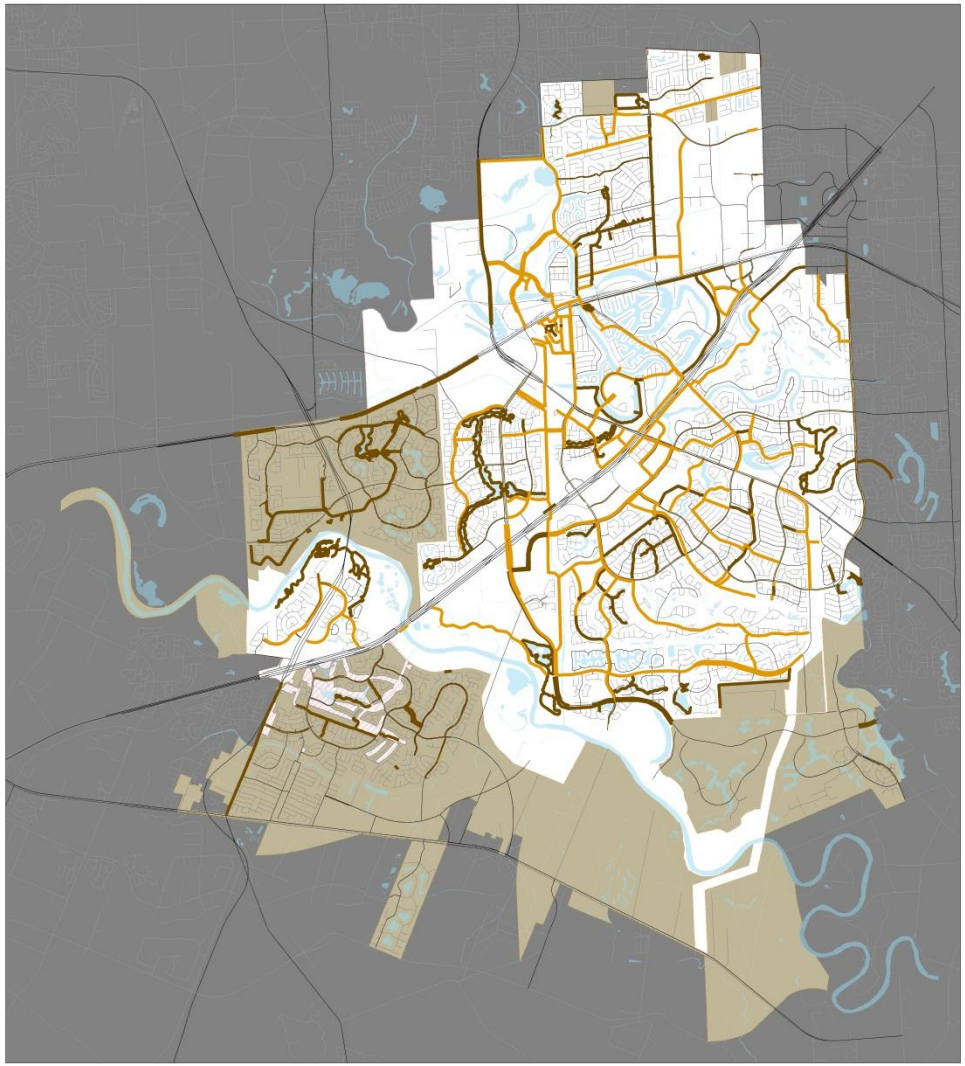
High Priority Facilities - Immediate

High Priority Facilities - Near Term

High Priority Facilities - Near Term
Sugar Land Pedestrian & Bicycle Master Plan

High Priority Facilities – Mid Term

High Priority Facilities - Mid Term
Sugar Land Pedestrian & Bicycle Master Plan



Other Recommendations to Encourage Walking & Bicycle Riding in Sugar Land

Action	Potential Cost (City only)	Priority
Work with schools to encourage walking & riding (school by school basis)	By existing staff	Begin short term, ongoing
Increase bicycle training for both children (through schools) and for adults.	Minimal City cost to support	Begin short term, ongoing
Increase the availability of bike racks at major destinations across the City – cost shared with business	$10,000	Short term
Development code amendment to incentivize bike parking	By existing staff	Short term
Special projects to improve awareness/culture of bicycling, through signage (share the road, etc.) or other methods (consider passing 3' to 4' minimum passing ordinance).	$10,000 per year initially	Short term

Other Recommendations to Encourage Walking & Bicycle Riding in Sugar Land

Action	Potential Cost (City Only)	Priority
Increased enforcement of bicycling related infractions (stop sign/signal runners, vehicles in bike facilities)	None (existing SLPD staff)	Short term, periodic focus
Develop printable ped and bike map • Develop interim signed bike routes	$20,000 for design & printing	Short term
Wayfinding signs, trailheads, information kiosks	Initial $20,000, then $10,000+/- year	Coordinate as major facilities are developed
Promote bike/ped connections to park and rides and area transit	TBD	Begin short term

PROJECTED PLAN COSTS
(HIGH PRIORITY RECOMMENDATIONS – 10 YEARS +/-)

Facility	Length	Projected Cost Range
Sidepaths	20.5 miles +/-	$13,500,000 to $16,000,000
Shared Use Paths (Trails)	14 miles +/-	$13,500,000 to $14,500,000
Bicycle Lanes	11 miles +/-	$500,000 to $550,000
Buffered Bike Lanes (includes one cycle track)	8 miles +/-	$750,000 to $850,000
Shared Lane Markings	14 miles +/-	$250,000 to $325,000
Sidewalks	4.4 miles +/-	$950,000 to $1,050,000
Barrier Reduction Items	NA	$6,300,000 to $9,200,000
Encouragement Programs (annual)	NA	$25,000 to $75,000
Total		**$35,775,000 to $42,550,000**

Funding Gap (High Priority Segments)

Total Potential Cost	**$36 – 42.5 Million +/-**

Potential Funding Sources (Years 1 – 5)	
Federal Grant Funding	$2 Million +/-
2013 Bond Funding (if approved)	$10 Million +/-
Segments funded by Development	$4 Million +/-

Funding Gap	**$20 – 26.5 Million +/-**

Potential Funding Sources (1)

Potential Funding Source	Used For	Example(s) – not all shown
Near Term Bond Funding (if approved)	Higher cost sidepaths & shared use paths	First Colony Trails, Ditch H Trail, Imperial Park, Brazos River Park trails
Annual CIP	On street and cycle track facilities	Bicycle lanes along Edgewater, Grants Lake, University Blvd
Homeowner Association Participation	HOA facilities (taken over or built by City)	Brazos River Pedestrian Bridge
Sugar Land 4B	Higher cost facilities, programs	Significant sidepath and shared use path projects
Additional Longer Term Voter Approved Bond Funding	Other higher cost sidepaths and shared use paths	Significant sidepath and shared use path projects projects
Grant Funding (TE/CMAQ/TIGER grants) as available	Special projects eligible for grant funding	Brazos River Pedestrian bridge, Town Center area ped/bike
Installed by Developer	Facilities in new developments	Imperial, Telfair

(1) For discussion purposes only to illustrate funding sources over initial 10+ years

Next Steps

- **Final Workshops**
  - **Parks Board, P&Z, City Council**
- **Post online draft for public view**
- **Public Hearing at P&Z**
- **Public Hearing, First Reading at City Council**
- **Second Reading at City Council**

DISCUSSION AND COMMENTS